TOROPOV, N.; SKVORTSOV, A.

All-out participation in fire prevention. Pozh.delo 6 no.8:11 Ag '60. (MIRA 13:8)

1. Zamestitel' nachal'nika pozharnoy okhrany kombinata "Krasnyy Perekop (for Toropov). 2. Starshiy inspektor Upravleniya pozharnoy okhrany, Yaroslavl' (for Skvortsov).
(Yaroslavl--Factories--Fires and fire prevention)

ACCESSION NR: AR4035562 S/0271/64/000/003/B010/B010

SOURCE: Ref. zh. Avtomat., telemekh. i vy*chisl. tekhn. Av. t., Abs. 3B48

AUTHOR: Butakov, Ye. A.; Toropov, N. R.

TITLE: Synthesis of the schemes realizing combinatorial operators

CITED SOURCE: Tr. Sibirsk. fiz.-tekhn. in-ta, vy*p. 42, 1963, 44-55

TOPIC TAGS: Gray code counter, shift register, Gray code counter synthesizing, combinatorial operator

TRANSLATION: Based on the Boolean algebra, a synthesis of a Gray-code counter with a digit blocking and a synthesis of a generator of combinations of n things, k at a time, are presented. These devices can be used in a control system of a specialized computer for investigating communication and control systems. Two methods are analyzed in synthesizing the Gray-code counter. In the first method, the conventional binary positional counter is used for obtaining Gray-code numbers (by a definite algorithm). Owing to the drawbacks of the first method (lower counting rate and need for additional equipment when symmetrical outputs in each counter digit are realized), the second method is used in the synthesizing in

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ACCESSION NR: AR4035562

which the Gray-code natural numbers appear directly in the counter. A Gray-code counter synthesis with blocking any k digits is presented. A functional scheme of odd and even cells is given. An algorithm underlying the generator of combinations of n things, k at a time, is described. This algorithm is also illustrated by a table presenting all combinations of 6, three at a time. An optimum scheme for realizing the algorithm consisting of k shift registers is presented. A scheme of 2-cycle magnetic-core shift register is analyzed. Six illustrations, two tables. Bibliography: 5 titles.

DATE ACQ: 14Apr64 SUB CODE: DP ENCL: 00

Card 2/2

KASHIROV, V. I.; BUTAKOV, Ye. A.; POTTOSIN, Yu. V.; TOROPOV, N. R.; TSVETNITSKAYA, S. A.

"Problems in Realizing the L-Machine."

r report presented at the Symp on Relay Systems Theory & Finite Automata, Moscow, 24 Sep-2 Oct 62.

TOROPOV, P.I.

Complete filling for the preservation of industrial buildings and structures in the Donets Basin. Ugol' 38 no.12: 13-14 '63. (MIRA 17:5)

1. Nachal'nik tekhnicheskogo otdela Gosudarstvennogo komiteta pri Sovete Ministrov UkrSSR po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru.

TOROPOV, P.I., inzh.; NOVIKOV, N.V.

Boring and blasting in mines under construction. Bezop.truda v prom. 2 no.9:10-11 S '58. (MIRA 11:9)

1.Kombinat Luganskshakhtostroy (for Toropov). 2.Trest Kadiyevshakhtostroy (for Novikov).
(Mining engineering)

TOROPOV, P. V.

21.1100

5/056/60/038/03/02/033
B006/B014

AUTHORS: Vasil'yev, Yu. A., Zamyatnin, Yu. S., Il'in, Yu. I., Sirotinin, Ye. I., Toropov, P. V., Fomushkin, E. F.

TITLE: Measurement of Spectra and the Average Neutron Number in the Fission of U^{235} and U^{238} by 14.3-Mev Neutrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 671-684

TEXT: The present article deals in detail with the experimental investigations made in the energy range 0.4 - 5 Mev by means of the time-of-flight technique and a pulsed neutron source. The experimental arrangement is schematically shown in Fig. 1. The reaction $T(d,n)He^4$ served as primary neutron source in the target of an accelerator. The target was bombarded with 150-kev deuterons. The time-of-flight determination was carried out electronically by measuring the time integrals between the pulses in the detector. The deuteron impulses were obtained by modulation; i.e., by means of a sinusoidal

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electric field (f = 2Mc/sec); the pulses of the 14.3-Mev neutrons lasted 3μsec and had a frequency of 4 Mc/sec. On the average, 4 neutrons were obtained per pulse. Two fission chambers were used (with U^{235} (90 per cent) and U^{238} (natural isotope composition)); the chambers were filled with a mixture of argon and CO_2-gas (10 per cent) at 760 torr. A tolan crystal (diameter 40 mm, thickness 25 mm) with a photomultiplier of the type ФЭУ-33 served as neutron detector. The efficiency of the detector was determined according to Hardy. Fig. 2 shows the efficiency as a function of the energy of three threshold energies: 0.2, 0.25, and 0.3 Mev. The electronic apparatus used to measure the pulse distribution in the detector with respect to time is described in detail. Fig. 3 illustrates a block scheme, Fig. 4 a recorded pulse versus time diagram. Fig. 5 shows the time distribution of the pulses recorded with the measurement of the neutron spectrum of the U^{238} fission. Besides neutrons and γ-rays of the fission the following were also recorded: 14-Mev primary neutrons, neutrons, and γ-quanta due to interaction between primary neutrons and parts of the apparatus, radiations of the activated

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substances, neutrons, and γ-quanta due to primary neutron scattering, and 2.5-Mev neutrons from the accelerator. Details and accuracy of the "separation" of the measured values from the background are discussed. The neutron spectra of U^{235} and U^{238} fission are shown in Figs. 7a and 7b. All curves show a similar course: a steep ascent, a peak, and an even descent. Figs. 8a and 8b show the diagrams made for the analysis of the spectra in the coordinates ln $(F(E)/E)$ and E_p. The spectra may be satisfactorily represented by

$$F(E) = \alpha \frac{E}{T^2} \exp(-E/T) + (1-\alpha)\frac{\exp(-v/T_f)}{\sqrt{\pi v T_f}} \exp(-E/T_f)\, \mathrm{sh}\, \frac{2\sqrt{vE}}{T_f}.$$

The analytical results are listed in Table 1. The following parameter values are indicated: for U^{235}, $T_f = (1.06 \pm 0.03)$ Mev; $T = (0.37 \pm 0.04)$ Mev; α (fraction of evaporated neutrons) = (0.16 ± 0.02)%; for U^{238}, $T_f = (1.16 \pm 0.03)$ Mev; $T = (0.40 \pm 0.04)$ Mev; $\alpha = (0.21 \pm 0.02)$%. The average number of neutrons emitted in the fission $\bar{\nu}$: 4.17 ± 0.30 (U^{235}) and

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4.28 ± 0.30 (U^{238}), the ratio $\bar{\nu}(U^{238})/\bar{\nu}(U^{235}) = 1.03 \pm 0.05$. The following data were obtained: U^{235}, $d\bar{\nu}/dE_n = 0.112 \pm 0.011$ and U^{238}, $d\bar{\nu}/dE_n = 0.115 \pm 0.011$; ($E_n$ - neutron energy). In conclusion, the authors thank Yu. Ye. Glazunov, A. F. Maslov, N. I. Nesudrov, V. A. Farohina, A. I. Nemshatov, V. S. Khorkhordin, and V. N. Shikin for having participated in the measurements and for their assistance, V. A. Kouzerov for computer calculations. Mention is also made of the group of V. A. Ivanov, Yu. G. Zamyatnin, G. A. Bat', and L. P. Kudrin. There are 9 figures, 2 tables, and 21 references, 12 of which are Soviet.

SUBMITTED: August 5, 1959

Card 4/4

AUTHORS: Vasil'yev, Yu. A. , Zamyatnin, Yu. S., Toropov, P. V., 89-12-9/29
Fomushkin, E. F.

TITLE: Measurement of the Neutron Spectrum in the Area below 0,5MeV by Means of the Time of Flight Method (Izmereniye spektrov neytronov v oblasti energiy nizhe 0,5 MeV metodom vremeni proleta)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3 , Nr 12, pp. 542-544 (USSR)

ABSTRACT: By applying an impulse source of neutrons the secondary neutron spectrum is measured, which develops, if 14 MeV neutrons pass through layers of uranium. A fission chamber, which was connected with a 30 channel analyzer, was used as a neutron detector. The distance between source and detector was 6 m.
The energy spectra for the following samples were shown by a graph:
a) U^{235} : 2,7 cm thick ($\sim 1/3\,\lambda$ in)
b) U^{238} : 2,5 cm thick ($\sim 1/3\,\lambda$ in)
c) U^{238} : 8 cm thick ($\sim$ in)
The spectra obtained from a) and b) originate from a simple interaction between 14 MeV neutrons and the uranium nuclei: It can be assumed that in the measured area of energy the development of the secondary neutrons originate from evaporization from

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the stimulated conditions of the compound core.
For the case c) the development of a higher number of slow neutrons was ascertained. These are the consequence of a multiple-inelastic interaction which confirms the existence of low situated levels in the U^{238} nucleus. There are 3 figures and 3 references, 2 of which are Slavic.

SUBMITTED: July 2o, 1957

AVAILABLE: Library of Congress

VASIL'YEV, Yu.A.; ZAMYATNIN, Yu.S.; IL'IN, Yu.I.; SIROTININ, Ye.I.; TOROPOV, P.V.; FOMUSHKIN, E.F.

Measuring the spectra and average number of neutrons in the fission of U^{235} and U^{238} induced by 14.3 Mev neutrons. Zhur.eksp.i teor.fiz. 38 no.3:670-684 Mr '60. (MIRA 13:7)

(Neutrons) (Nuclear fission) (Uranium--Isotopes)

L 24354-66 EWP(e)/EWT(m) WH

ACC NR: AP6007259 SOURCE CODE: UR/0363/66/002/002/0357/0362

AUTHOR: Toropov, N.A.; Zhukauskas, R.-S.M.; Aleynikov, F.K.

ORG: Institute for Chemistry and Chemical Technology AN LitSSR (Institut khimii i khimicheskoy tekhnologii AN LitSSR)

TITLE: The structural transformations of synthetic cordierite

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 2, 1966, 357-362

TOPIC TAGS: cordierite, crystal structure, silicate

ABSTRACT: The test samples were of cordierite synthesized from glass in a heat treatment of from 0.5 to 120 hours, at temperatures from 1100 to 1460°C. The heat treatment was done in a Silit furnace in platinum crucibles, with subsequent air cooling. Glasses of three composition were investigated: a stoichiometric cordierite composition, a composition with 10 weight % more silicon dioxide, and a composition with 10 weight % less silicon dioxide. X-ray investigations were carried out on a URS-50I unit. Results are shown in graphic and tabular form. As the result of prolonged heat treatment at 1400°C a lower rhombic form was obtained from the higher hexagonal cordierite. On raising the temperature up to 1460°C, the reverse transition was

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L 24354-66

ACC NR: AP6007259

obtained with ordering of the structure of the cordierite. The process of transition from the high to the lower cordierite was observed electromicroscopically. It was established that the polymorphous transition with formation of rhombic cordierite is accompanied by partial amorphization of the crystal structure which proceeds at a high rate in a narrow temperature interval. The rhombic modification of cordierite is stable in the temperature range up to 1440°C. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 07,11/ SUBM DATE: 29Jun65/ ORIG REF: 008/ OTH REF: 005

Card 2/2

L 24279-66 EWP(e)/EWT(m)/EWP(j)/T/EWP(t)/ETC(m)-6 IJP(c) DS/JD/WW/JG/RM/WH

ACC NR: AP6009792 SOURCE CODE: UR/0062/66/000/002/0212/0217

AUTHOR: Bondar', I. A.; Toropov, N. A.

ORG: Institute of Silicate Chemistry im. I. V. Grebenshchikov, Academy of Sciences, SSSR (Institut khimii silikatov Akademii nauk SSSR)

70 B

TITLE: Phase equilibria in the ytterbium oxide-alumina system and their comparison with equilibria in other Ln_2O_3-Al_2O_3 systems

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 2, 1966, 212-217

TOPIC TAGS: phase diagram, phase equilibrium, alumina, aluminum oxide, aluminate, samarium compound, ytterbium compound, hardness, density, melting point, chemical resistant material, rare earth compound

ABSTRACT: Phase diagrams were constructed for the Yb_2O_3-Al_2O_3 and Sm_2O_3-Al_2O_3 systems. X-ray studies confirmed the compounds $2Yb_2O_3.Al_2O_3$ and $3Yb_2O_3.5Al_2O_3$. The physical properties of the La, Er, Sm, Y, Tb and Yb aluminates were compared. The infusibility, hardness, density and chemical resistance of the rare earth aluminates helps make them suitable for high frequency ceremics, luminophores, materials for absorption of neutrons and protection against gamma radiation, and

Card 1/2

UDC: 539.26+546.65

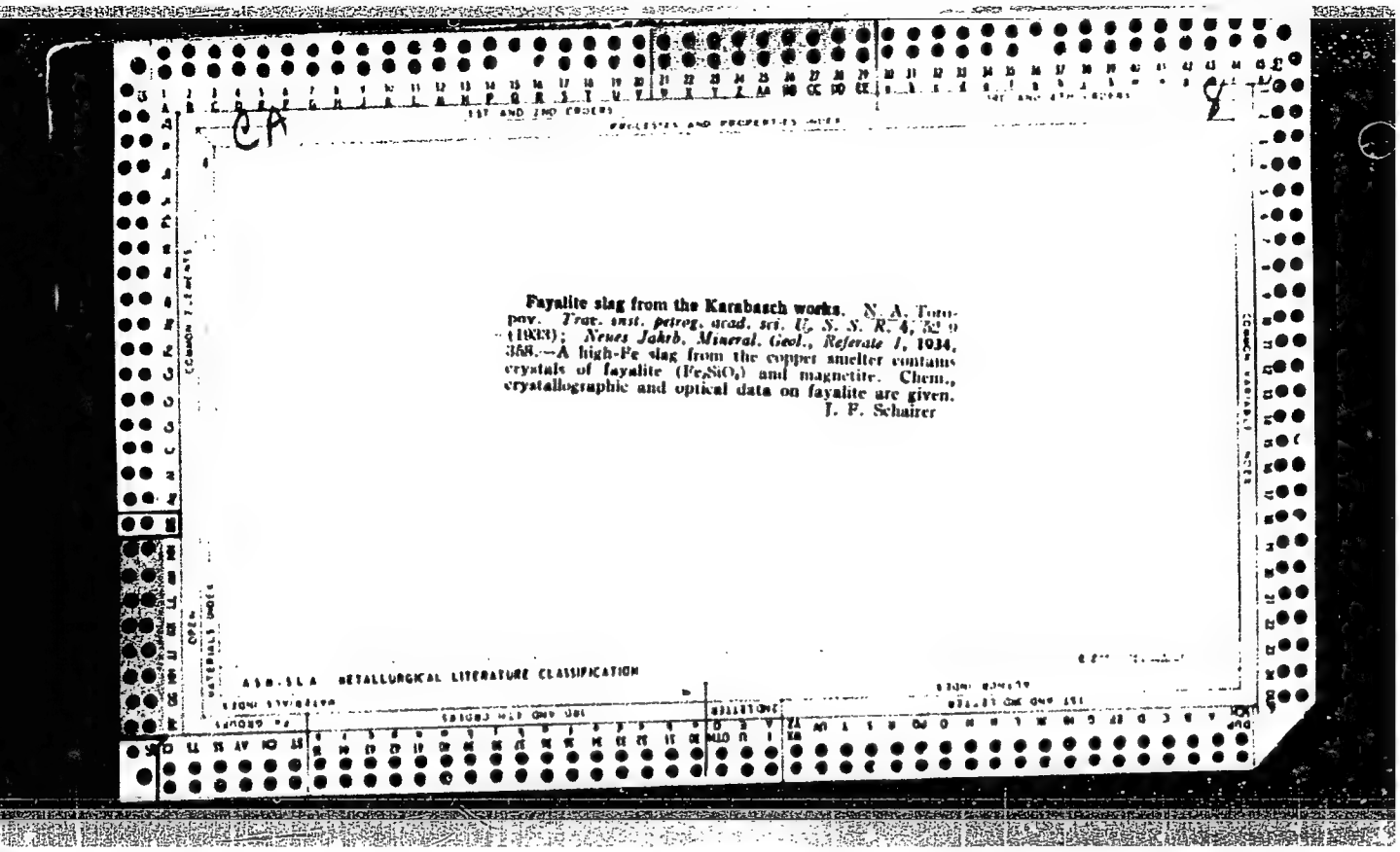
L 24279-66

ACC NR: AP6009792 O

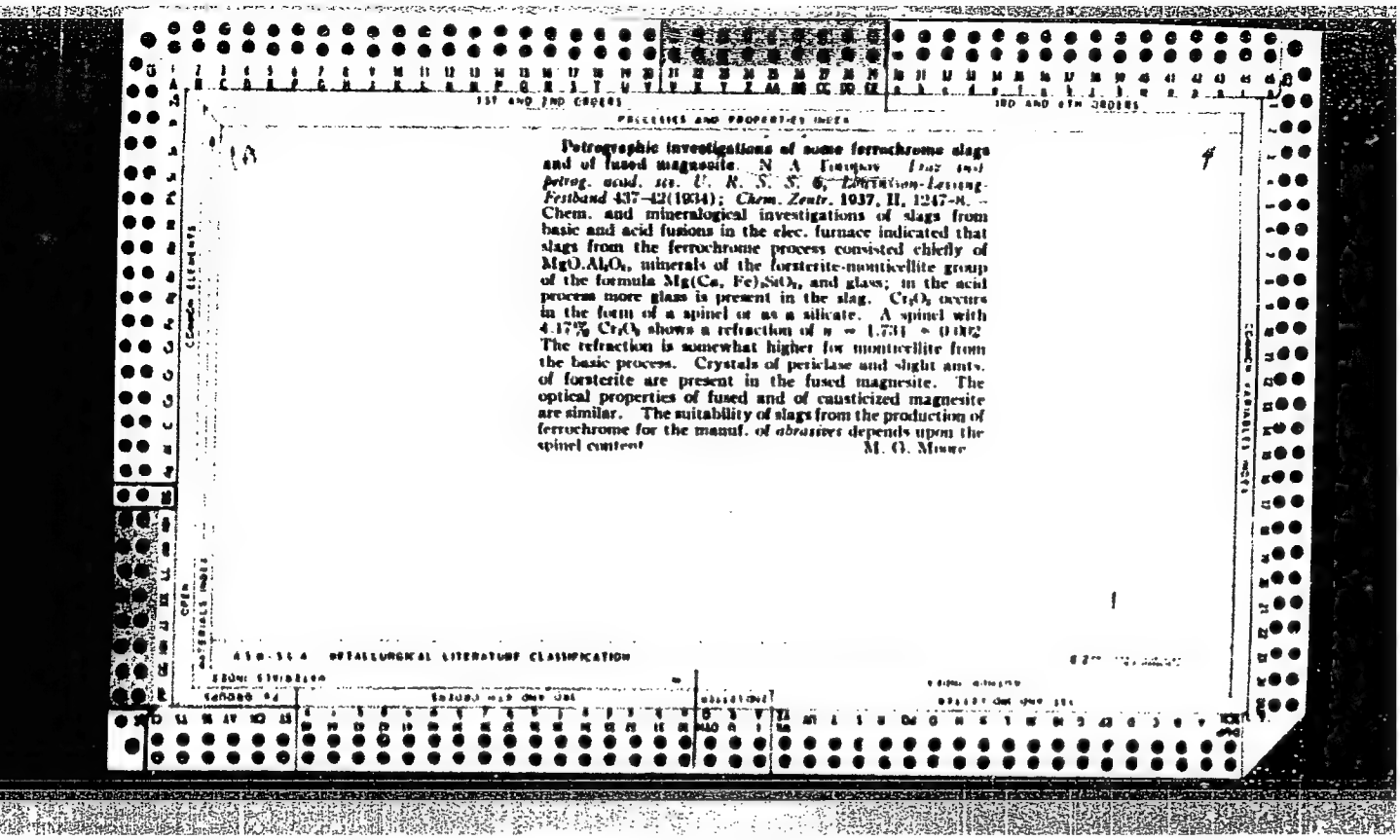
materials resistant to high temperature and aggressive media. Orig. art. has: 1 table and 5 figures.

SUB CODE: 11, 07/ SUBM DATE: 02Sep63/ ORIG REF: 003/ OTH REF: 001

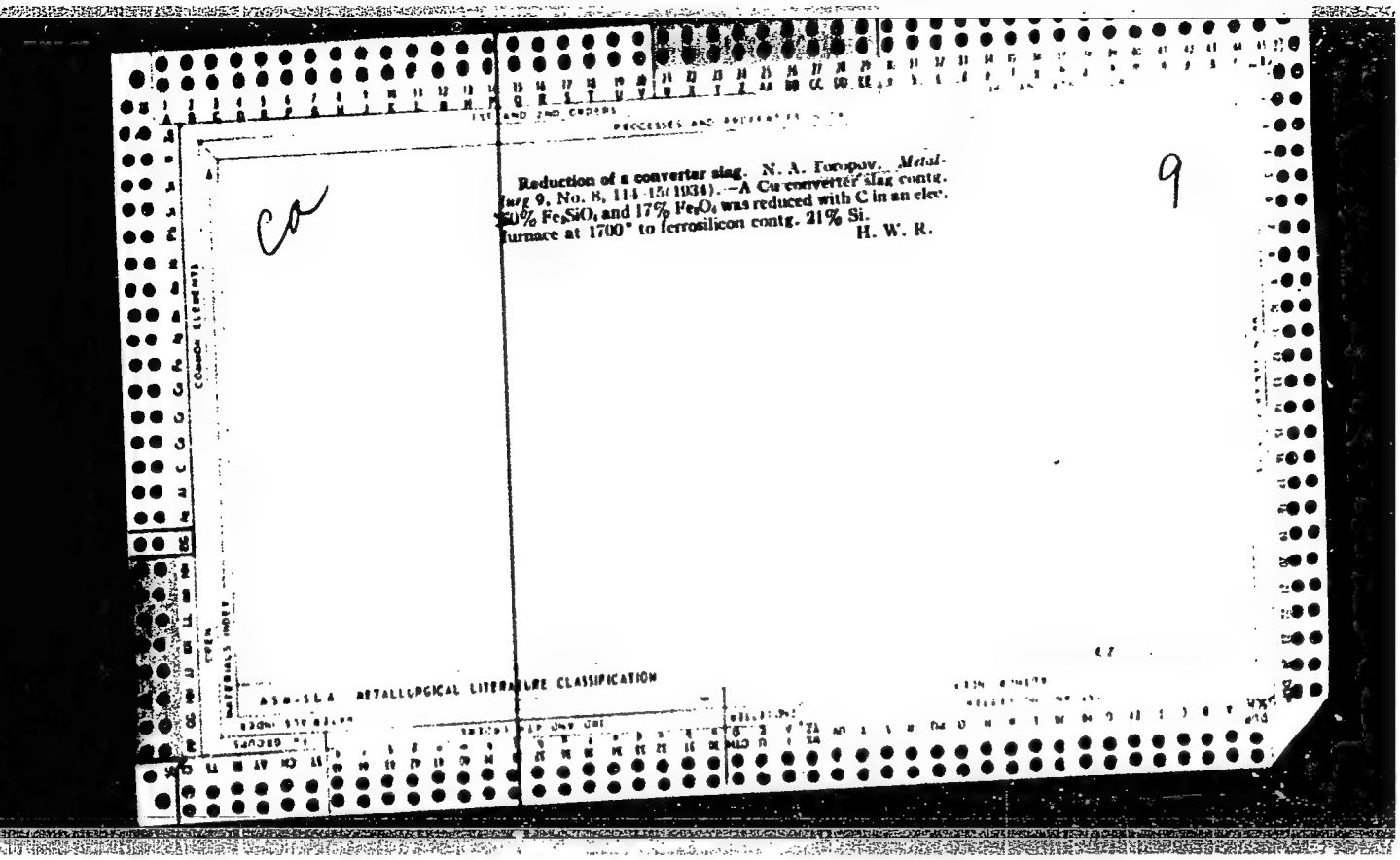
Card 2/2 KV



Fayalite slag from the Karabasch works. N. A. Toropov. *Trav. inst. petrog. acad. sci. U. S. S. R.* **4**, 87–9 (1933); *Neues Jahrb. Mineral. Geol., Referate I*, 1934, 358.—A high-Fe slag from the copper smelter contains crystals of fayalite (Fe_2SiO_4) and magnetite. Chem., crystallographic and optical data on fayalite are given.
J. F. Schairer



Petrographic investigations of some ferrochrome slags and of fused magnesite. N. A. Toropov. *Trudy inst. petrog. acad. sci. U. R. S. S.* **6**, Lomonosov-Lessing-Festband 437–42(1934); *Chem. Zentr.* 1937, II, 1247–8. — Chem. and mineralogical investigations of slags from basic and acid fusions in the elec. furnace indicated that slags from the ferrochrome process consisted chiefly of $MgO.Al_2O_3$, minerals of the forsterite-monticellite group of the formula $Mg(Ca, Fe)_2SiO_4$, and glass; in the acid process more glass is present in the slag. Cr_2O_3 occurs in the form of a spinel or as a silicate. A spinel with 4.17% Cr_2O_3 shows a refraction of $n = 1.731 \pm 0.002$. The refraction is somewhat higher for monticellite from the basic process. Crystals of periclase and slight amts. of forsterite are present in the fused magnesite. The optical properties of fused and of causticized magnesite are similar. The suitability of slags from the production of ferrochrome for the manuf. of *abrasives* depends upon the spinel content. M. G. Moore

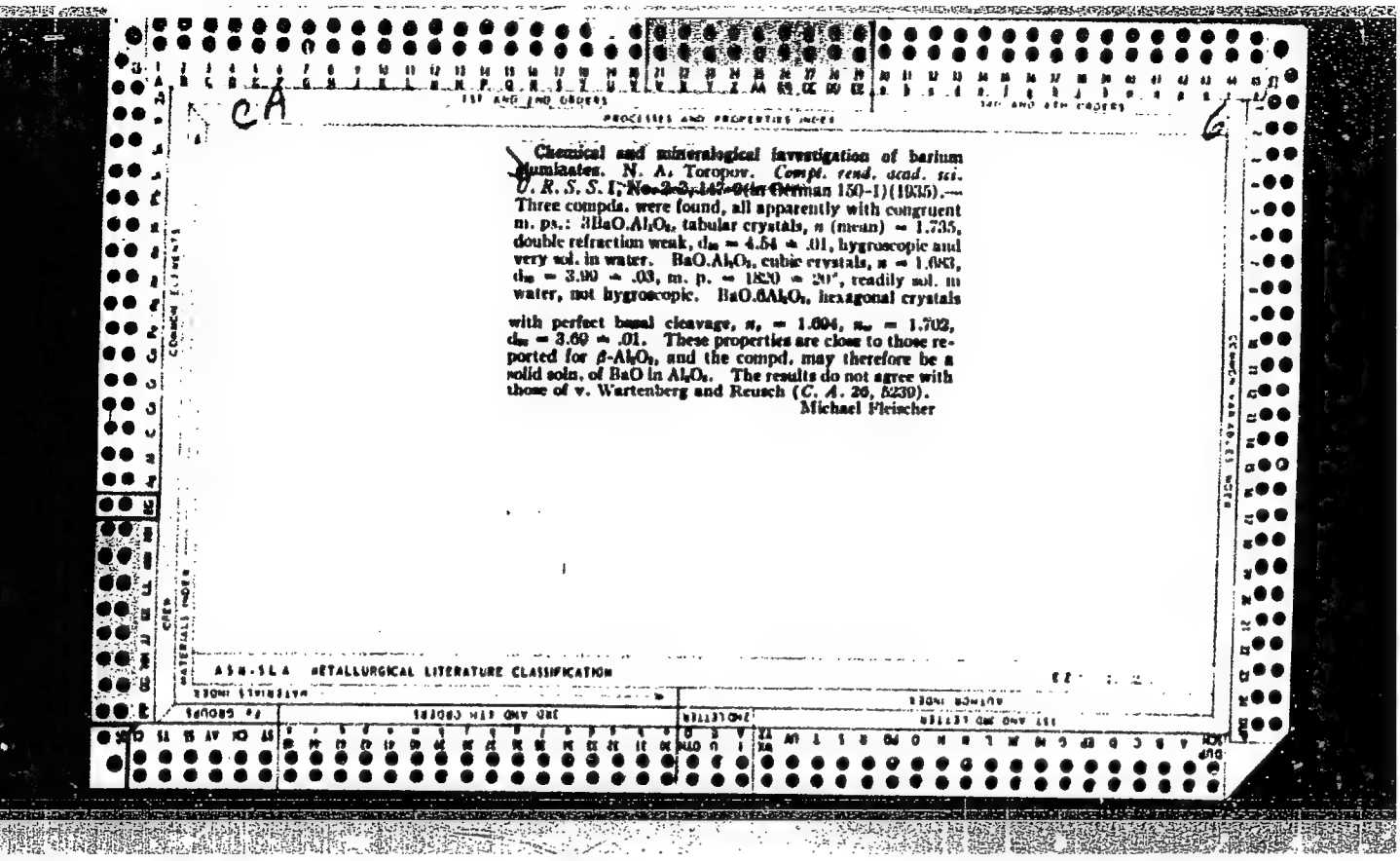


Co

9

Reduction of a converter slag. N. A. Toropov. *Metallurg* 9, No. 8, 114–15(1934).—A Cu converter slag contg. 50% Fe_2SiO_4 and 17% Fe_3O_4 was reduced with C in an elec. furnace at 1700° to ferrosilicon contg. 21% Si.
H. W. R.

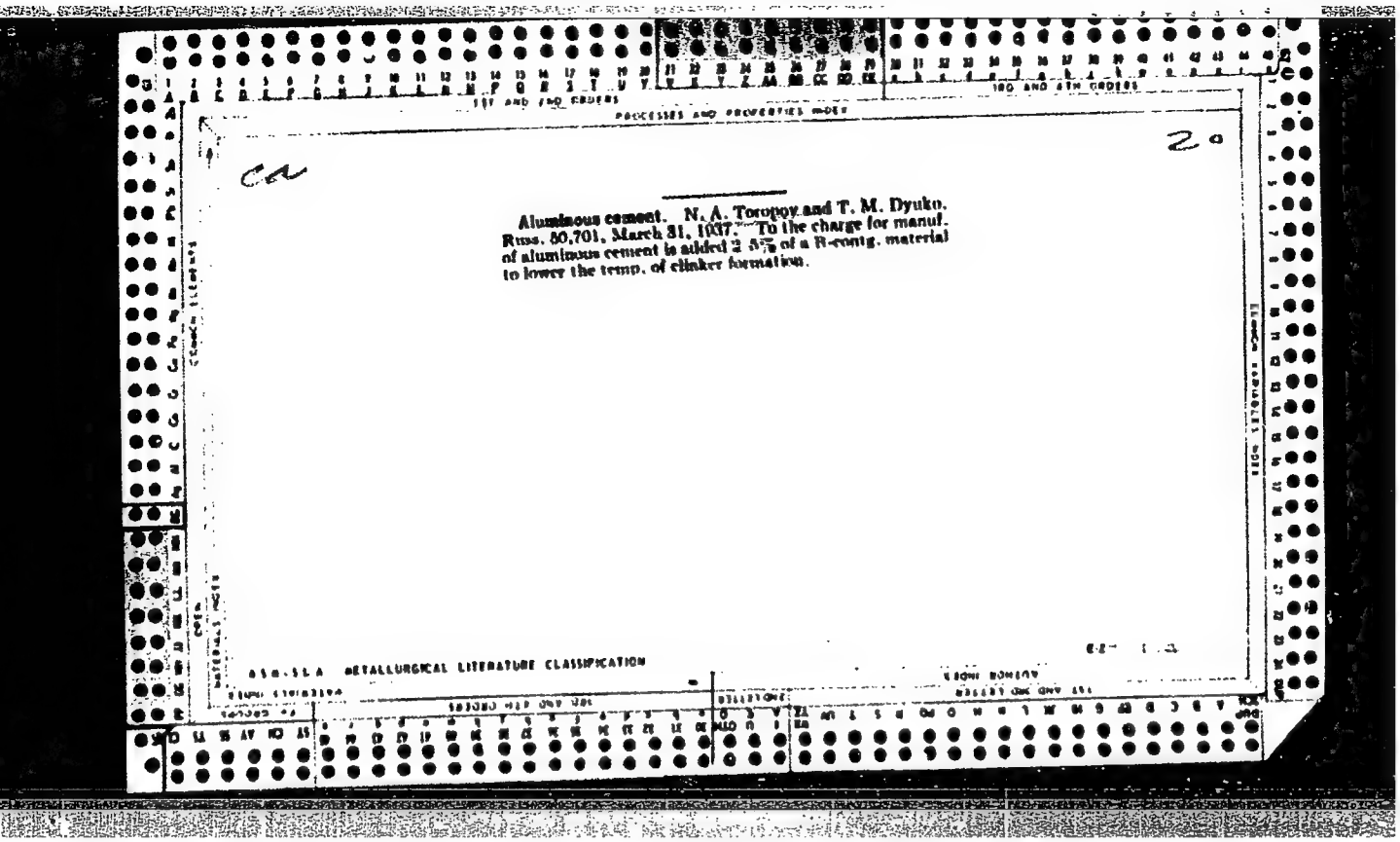
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



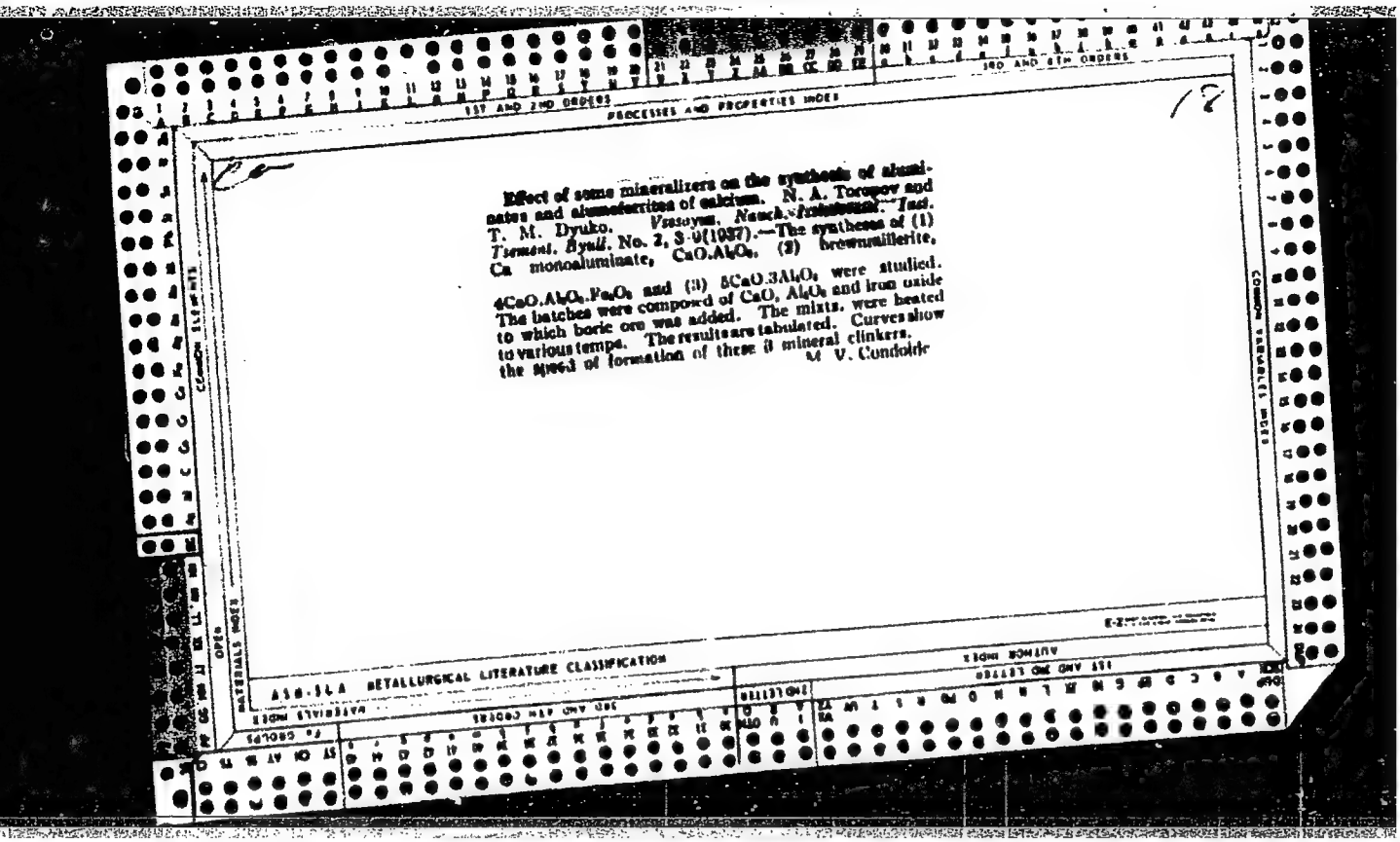
CA

Chemical and mineralogical investigation of barium aluminates. N. A. Toropov. *Compt. rend. acad. sci. U. R. S. S.* 1, No. 2-3, 147-9 (in German 150-1)(1935).—Three compds. were found, all apparently with congruent m. ps.: $3BaO.Al_2O_3$, tabular crystals, n (mean) = 1.735, double refraction weak, d_{20} = 4.54 ± .01, hygroscopic and very sol. in water. $BaO.Al_2O_3$, cubic crystals, n = 1.683, d_{20} = 3.90 ± .03, m. p. = 1820 ± 20°, readily sol. in water, not hygroscopic. $BaO.6Al_2O_3$, hexagonal crystals with perfect basal cleavage, n_ω = 1.696, n_ϵ = 1.702, d_{20} = 3.60 ± .01. These properties are close to those reported for β-Al_2O_3, and the compd. may therefore be a solid soln. of BaO in Al_2O_3. The results do not agree with those of v. Wartenberg and Reusch (*C. A.* 26, 5239).

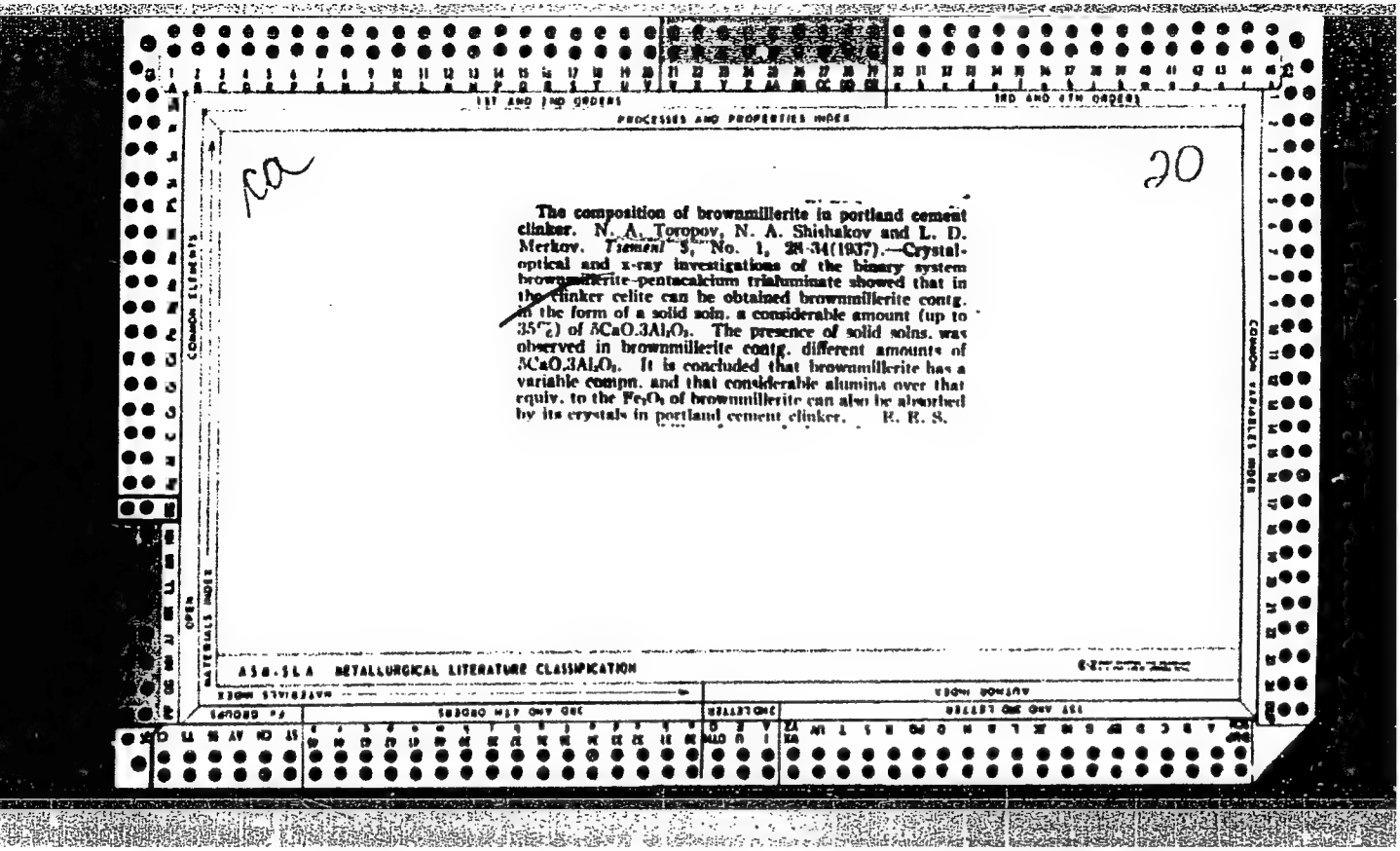
Michael Fleischer



Aluminous cement. N. A. Toropov and T. M. Dyuko. Russ. 80,701, March 31, 1937. To the charge for manuf. of aluminous cement is added 2–5% of a B-contg. material to lower the temp. of clinker formation.



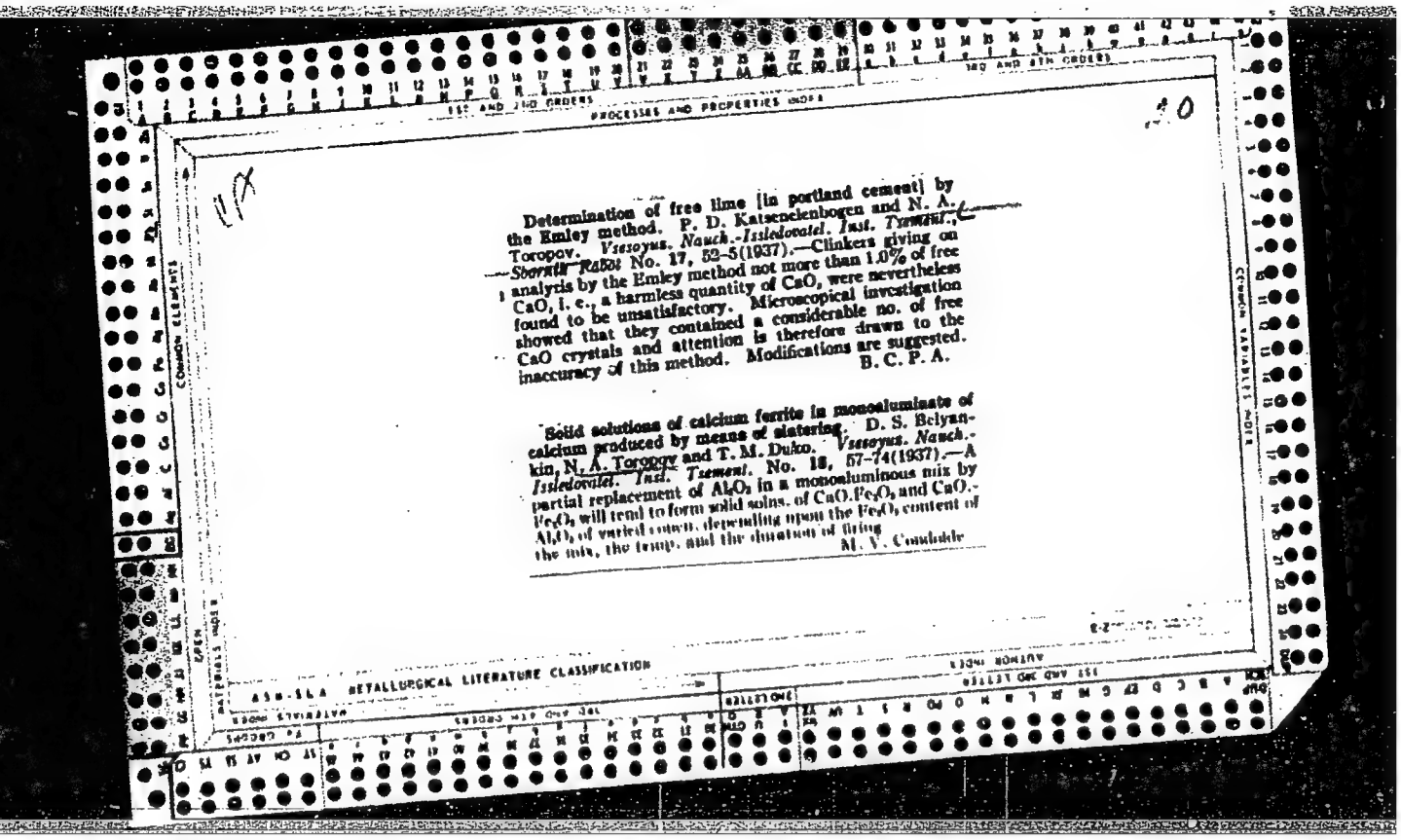
Effect of some mineralizers on the synthesis of alumi-
nates and alumoferrites of calcium. N. A. Toropov and
T. M. Dyuko. *Trudy Inst. Khimii Silikatov Akad. Nauk S.S.S.R.* No. 2, 3-9(1957).—The syntheses of (1)
Ca monoaluminate, $CaO.Al_2O_3$, (2) brownmillerite,
$4CaO.Al_2O_3.Fe_2O_3$ and (3) $5CaO.3Al_2O_3$ were studied.
The batches were composed of CaO, Al_2O_3 and iron oxide
to which boric oxide was added. The mixts. were heated
to various temps. The results are tabulated. Curves show
the speed of formation of these 3 mineral clinkers.
M. V. Condoide



20

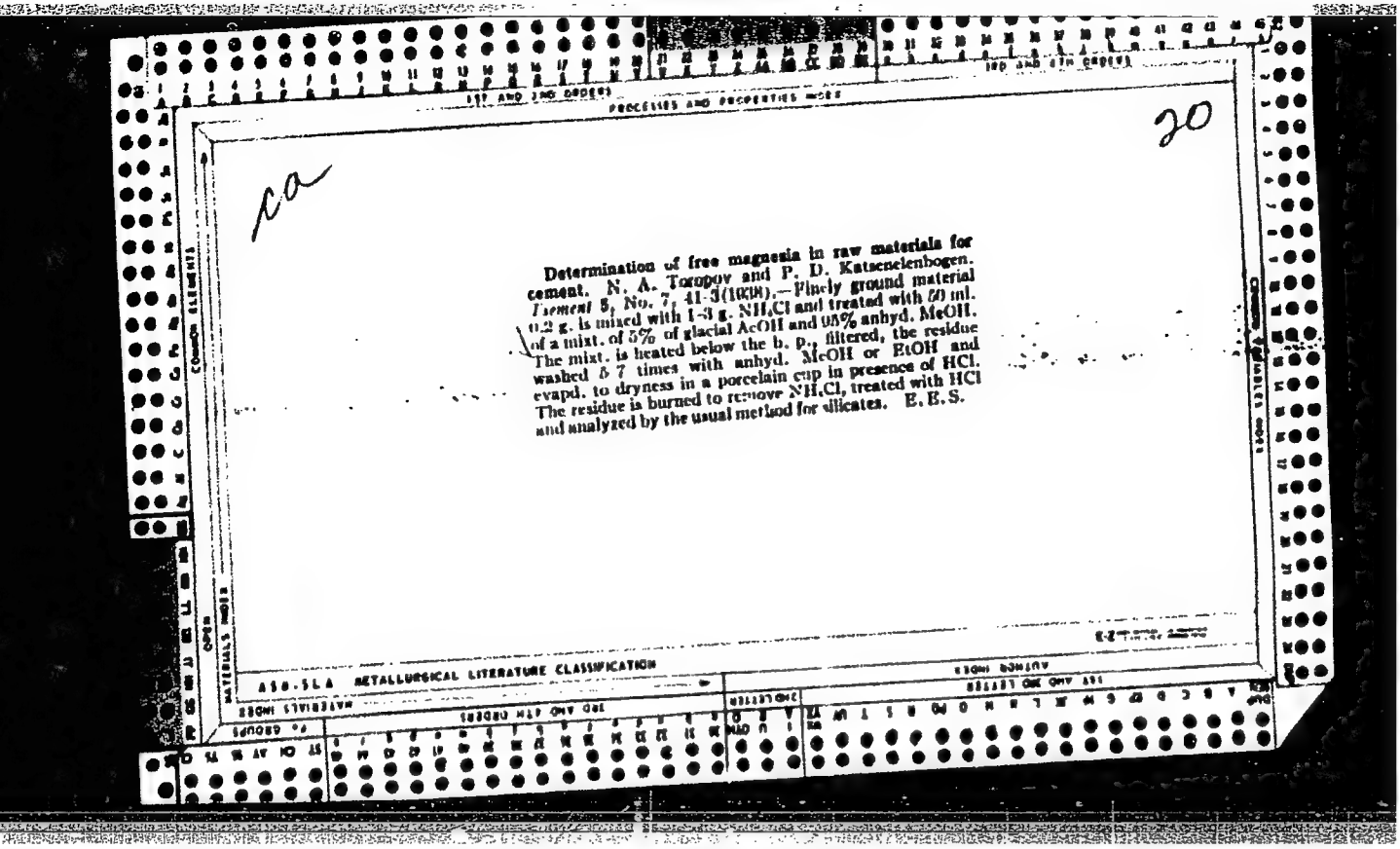
The composition of brownmillerite in portland cement clinker. N. A. Toropov, N. A. Shishakov and L. D. Merkov. *Tsement* 5, No. 1, 28-34(1937).—Crystal-optical and x-ray investigations of the binary system brownmillerite–pentacalcium trialuminate showed that in the clinker celite can be obtained brownmillerite contg. in the form of a solid soln. a considerable amount (up to 35%) of $5CaO.3Al_2O_3$. The presence of solid solns. was observed in brownmillerite contg. different amounts of $5CaO.3Al_2O_3$. It is concluded that brownmillerite has a variable compn. and that considerable alumina over that equiv. to the Fe_2O_3 of brownmillerite can also be absorbed by its crystals in portland cement clinker. R. R. S.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Determination of free lime [in portland cement] by the Emley method. P. D. Katsnelenbogen and N. A. Toropov. *Vsesoyus. Nauch.-Issledovatel. Inst. Tsimenta, Sbornik Rabot* No. 17, 52–5(1937).—Clinkers giving on analysis by the Emley method not more than 1.0% of free CaO, i. e., a harmless quantity of CaO, were nevertheless found to be unsatisfactory. Microscopical investigation showed that they contained a considerable no. of free CaO crystals and attention is therefore drawn to the inaccuracy of this method. Modifications are suggested.
B. C. P. A.

Solid solutions of calcium ferrite in monoaluminate of calcium produced by means of sintering. D. S. Belyankin, N. A. Toropov and T. M. Dukso. *Vsesoyus. Nauch.-Issledovatel. Inst. Tsement.* No. 18, 57–74(1937).—A partial replacement of Al_2O_3 in a monoaluminous mix by Fe_2O_3 will tend to form solid solns. of $CaO.Fe_2O_3$ and $CaO.Al_2O_3$ of varied comp. depending upon the Fe_2O_3 content of the mix, the temp. and the duration of firing.
M. V. Coudsdle



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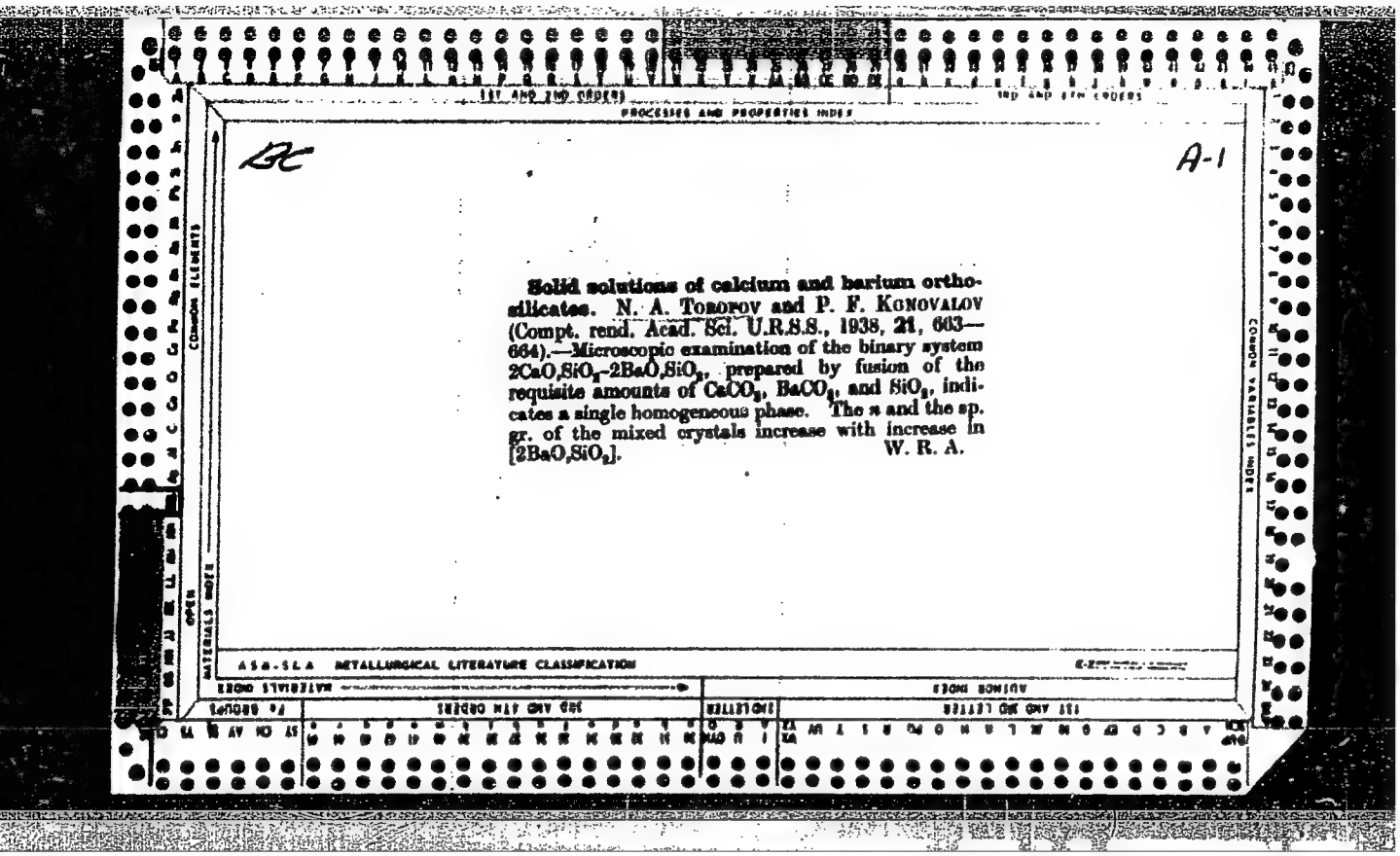
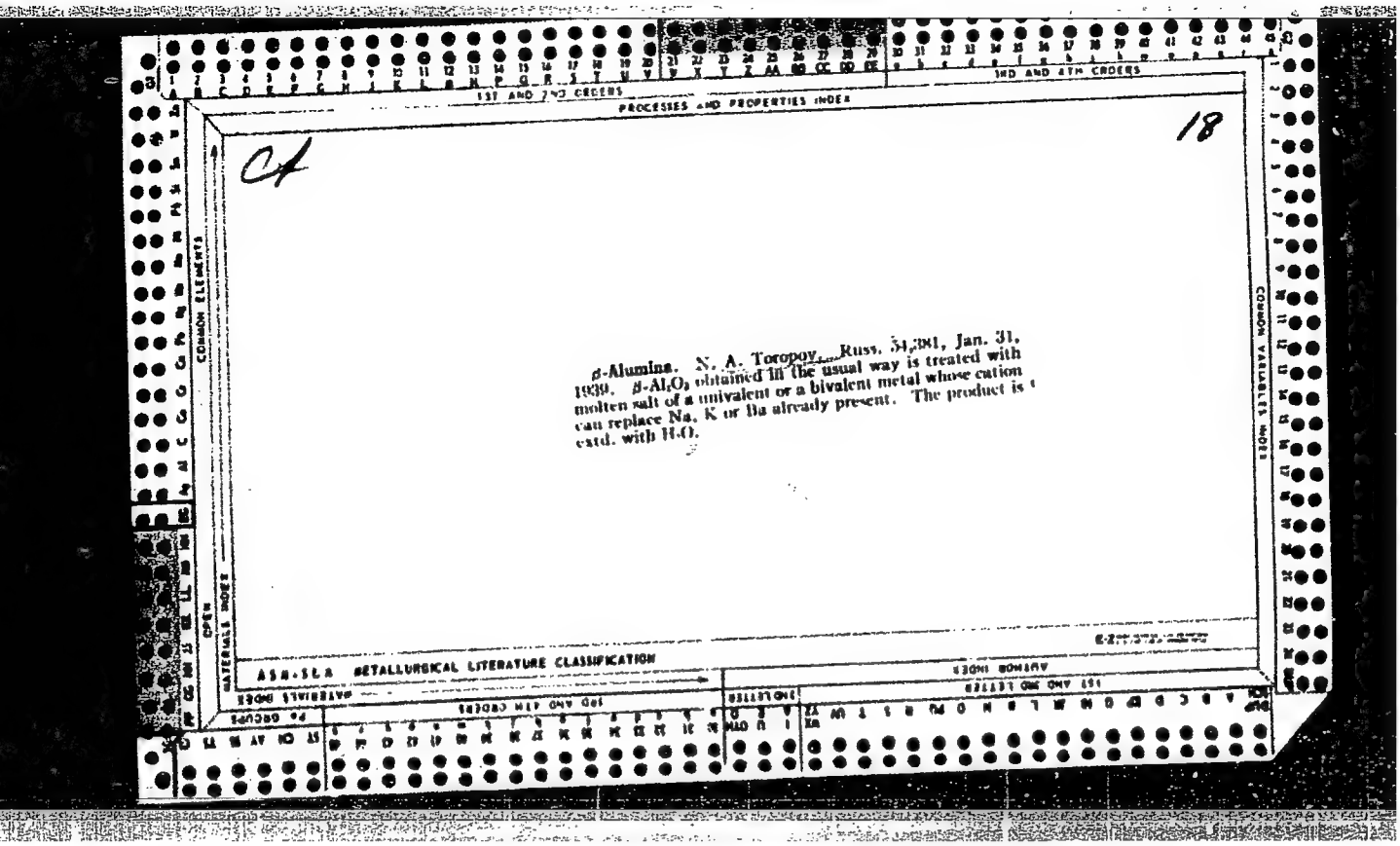
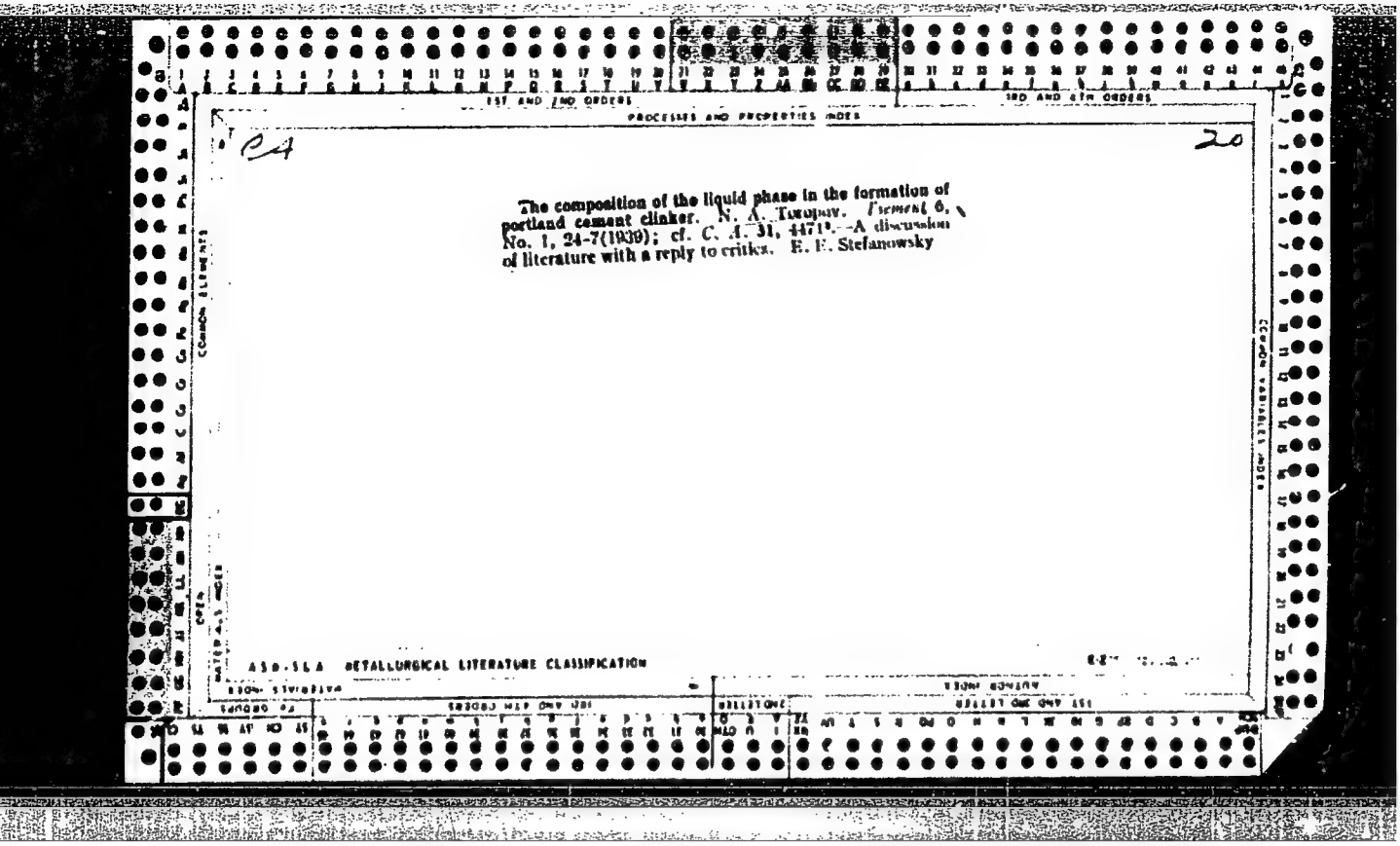
Determination of free magnesia in raw materials for cement. N. A. Toropov and P. D. Katsnelenbogen. *Tsement* 5, No. 7, 41-3(1939).—Finely ground material 0.2 g. is mixed with 1-3 g. NH_4Cl and treated with 50 ml. of a mixt. of 5% of glacial AcOH and 95% anhyd. MeOH. The mixt. is heated below the b. p., filtered, the residue washed 5-7 times with anhyd. MeOH or EtOH and evapd. to dryness in a porcelain cup in presence of HCl. The residue is burned to remove NH_4Cl, treated with HCl and analyzed by the usual method for silicates. E. E. S.



A-1

Solid solutions of calcium and barium orthosilicates. N. A. TOROPOV and P. F. KONOVALOV (Compt. rend. Acad. Sci. U.R.S.S., 1938, **21**, 663—664).—Microscopic examination of the binary system $2CaO,SiO_2$–$2BaO,SiO_2$, prepared by fusion of the requisite amounts of $CaCO_3$, $BaCO_3$, and SiO_2, indicates a single homogeneous phase. The *n* and the sp. gr. of the mixed crystals increase with increase in $[2BaO,SiO_2]$. W. R. A.



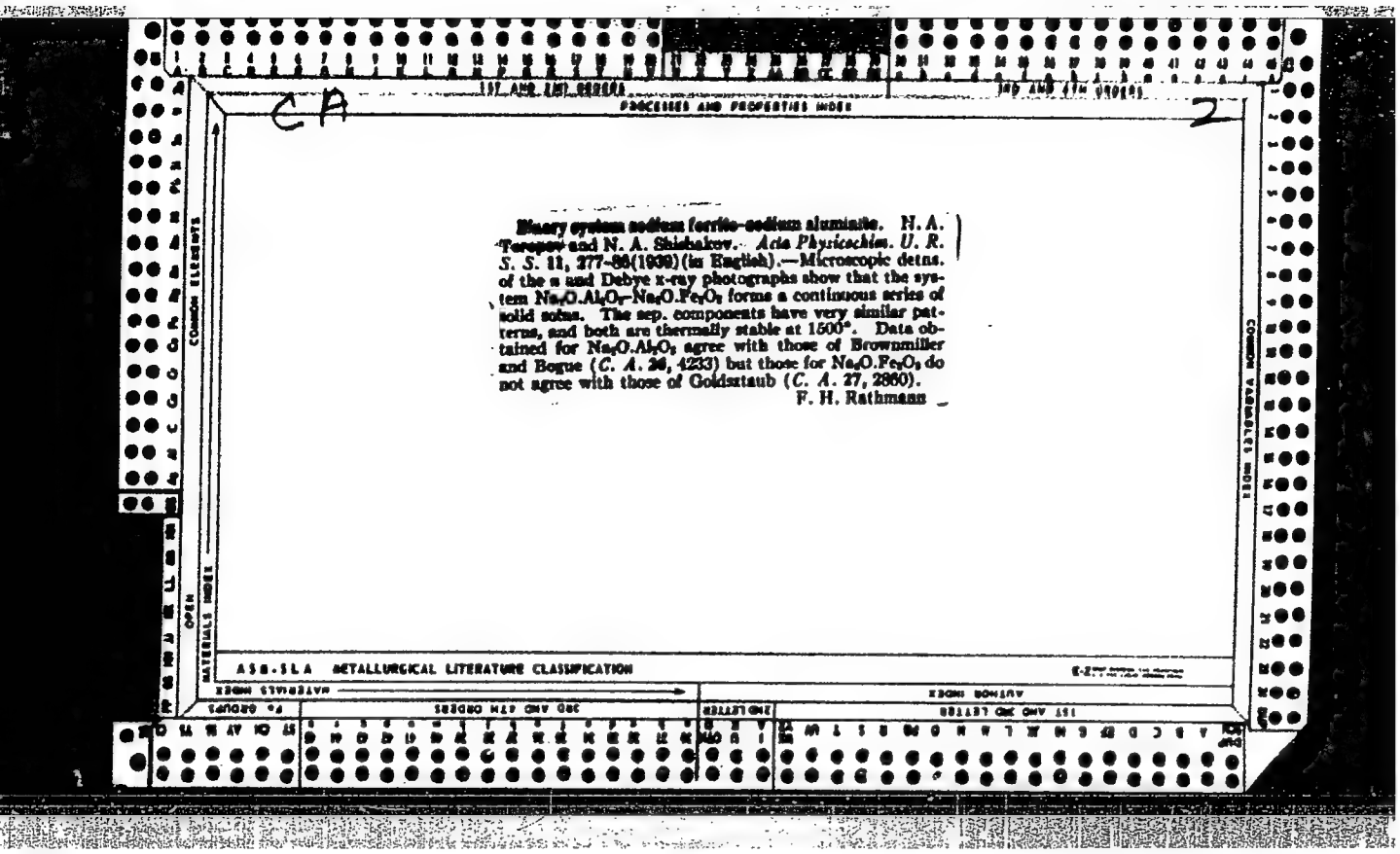


C4

20

The composition of the liquid phase in the formation of portland cement clinker. N. A. Tyrupav. *Tsement* 6, No. 1, 24-7(1939); cf. C. A. 31, 4471⁹.—A discussion of literature with a reply to critics. E. F. Stefanowsky

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

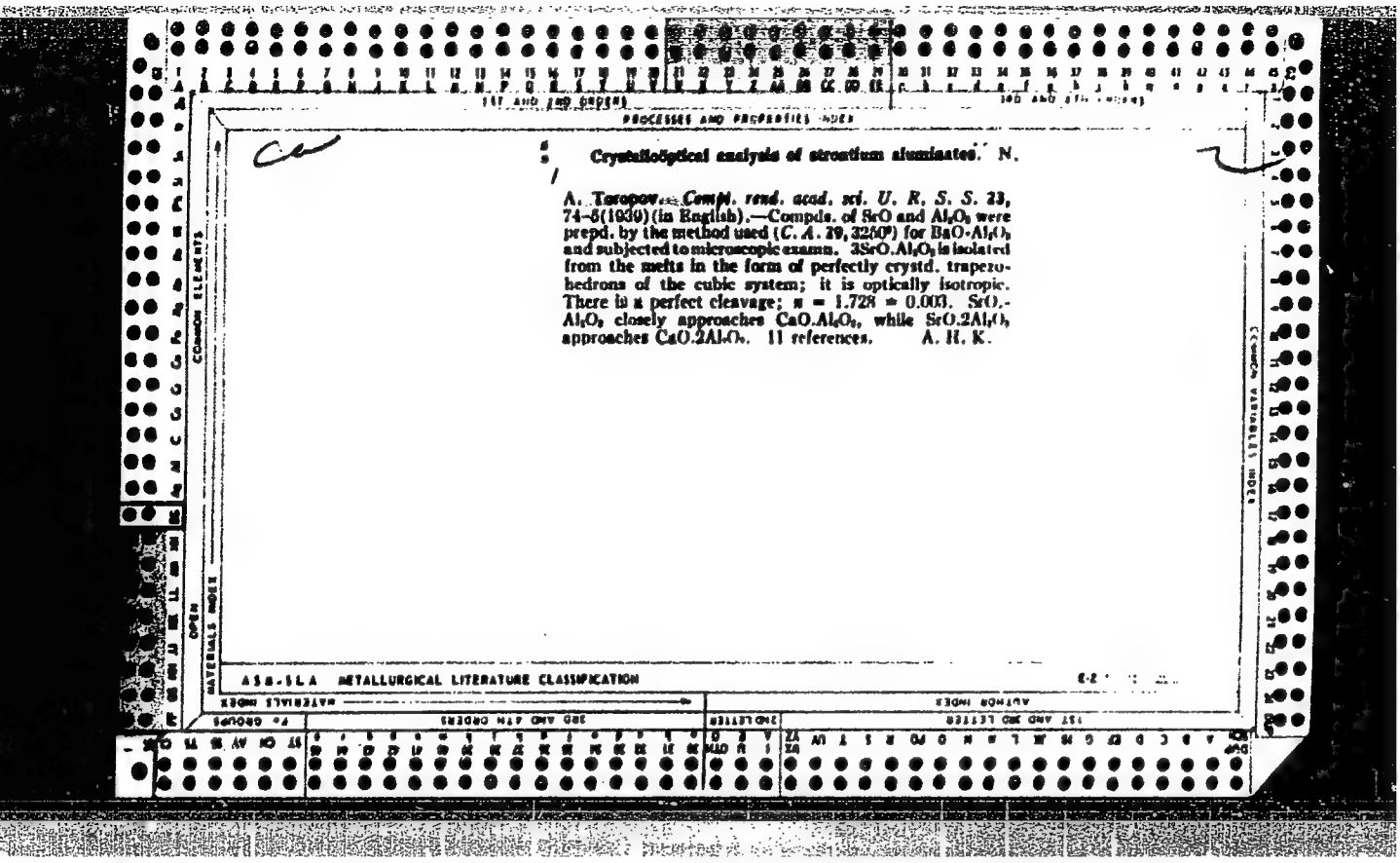


CA

2

Binary system sodium ferrite–sodium aluminate. N. A. Toropov and N. A. Shishakov. *Acta Physicochim. U. R. S. S.* 11, 277–86(1939)(in English).—Microscopic detns. of the α and Debye x-ray photographs show that the system $Na_2O.Al_2O_3$–$Na_2O.Fe_2O_3$ forms a continuous series of solid solns. The sep. components have very similar patterns, and both are thermally stable at 1500°. Data obtained for $Na_2O.Al_2O_3$ agree with those of Brownmiller and Bogue (*C. A.* 26, 4233) but those for $Na_2O.Fe_2O_3$ do not agree with those of Goldsztaub (*C. A.* 27, 2860).

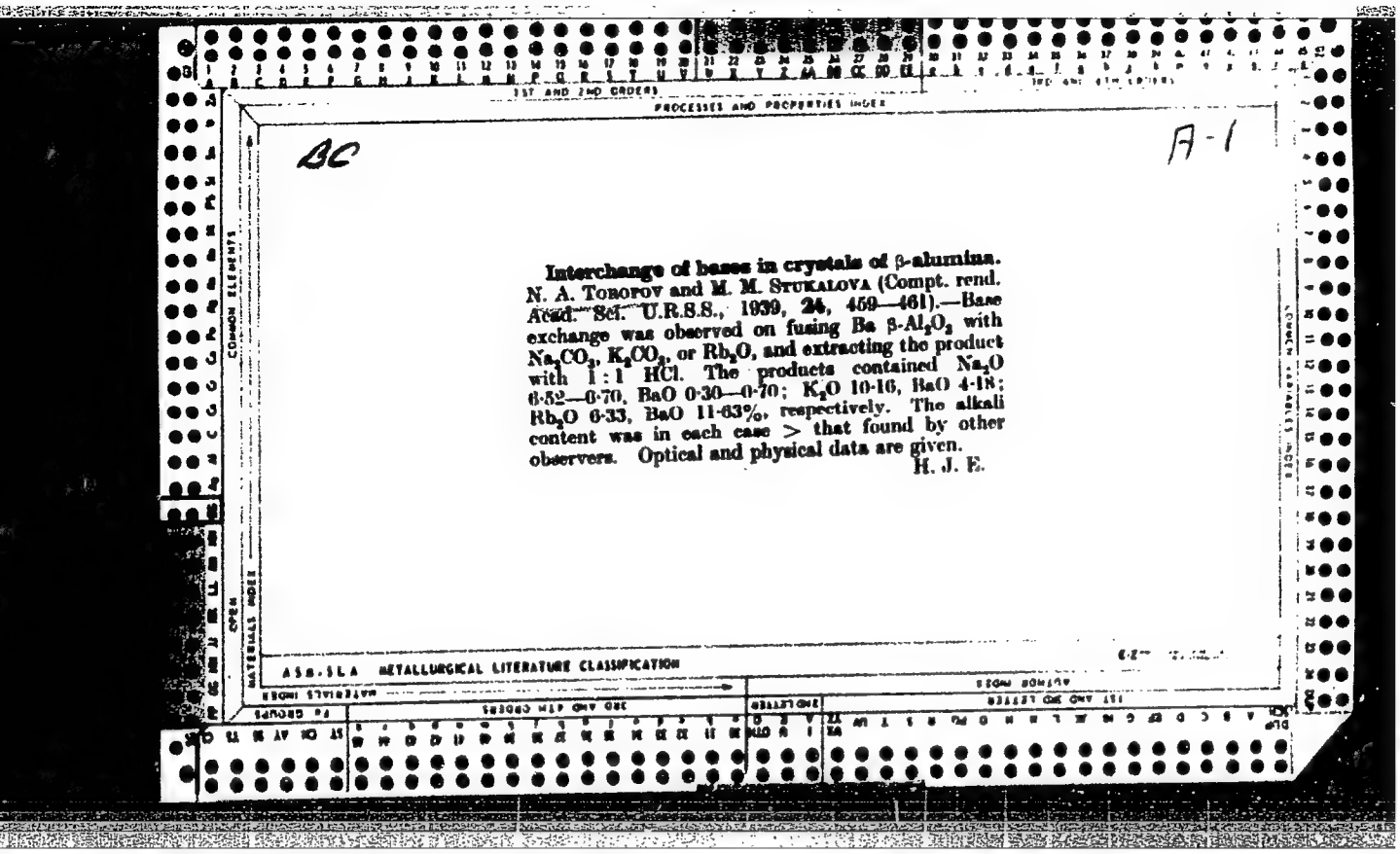
F. H. Rathmann



Crystallooptical analysis of strontium aluminates. N.

A. Taropov. *Compt. rend. acad. sci. U. R. S. S.* 23, 74–8(1939)(in English).—Compds. of SrO and Al_2O_3 were prepd. by the method used (*C. A.* 29, 3260°) for $BaO·Al_2O_3$ and subjected to microscopic examn. $3SrO.Al_2O_3$ is isolated from the melts in the form of perfectly crystd. trapezohedrons of the cubic system; it is optically isotropic. There is a perfect cleavage; $n = 1.728 \pm 0.003$. $SrO.Al_2O_3$ closely approaches $CaO.Al_2O_3$, while $SrO.2Al_2O_3$ approaches $CaO.2Al_2O_3$. 11 references. A. H. K.

A58-51A METALLURGICAL LITERATURE CLASSIFICATION



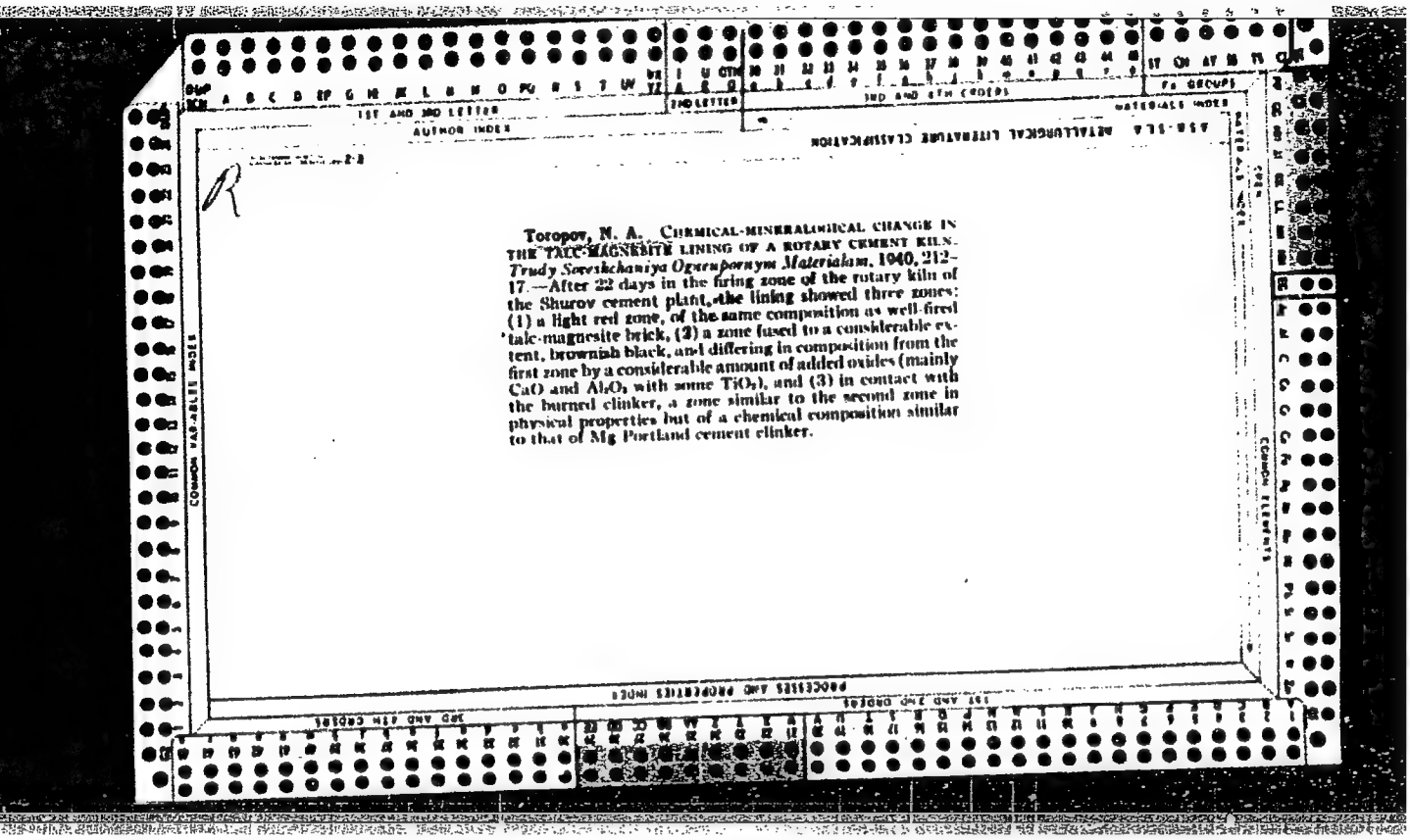
BC

A-1

Interchange of bases in crystals of β-alumina. N. A. TOROPOV and M. M. STUKALOVA (Compt. rend. Acad. Sci. U.R.S.S., 1939, **24**, 459—461).—Base exchange was observed on fusing Ba β-Al_2O_3 with Na_2CO_3, K_2CO_3, or Rb_2O, and extracting the product with 1 : 1 HCl. The products contained Na_2O 6·52—6·70, BaO 0·30—0·70; K_2O 10·16, BaO 4·18; Rb_2O 6·33, BaO 11·63%, respectively. The alkali content was in each case > that found by other observers. Optical and physical data are given.

H. J. E.

Hydraulic cement of high density. N. A. TORGOV AND P. P. KONOVALOV. Russ. 58,500, Dec. 31, 1940; *Chem. Abs.*, **39**, 1033 (1945).—To the usual cement ingredients are added Ba compounds, e.g., BaO.

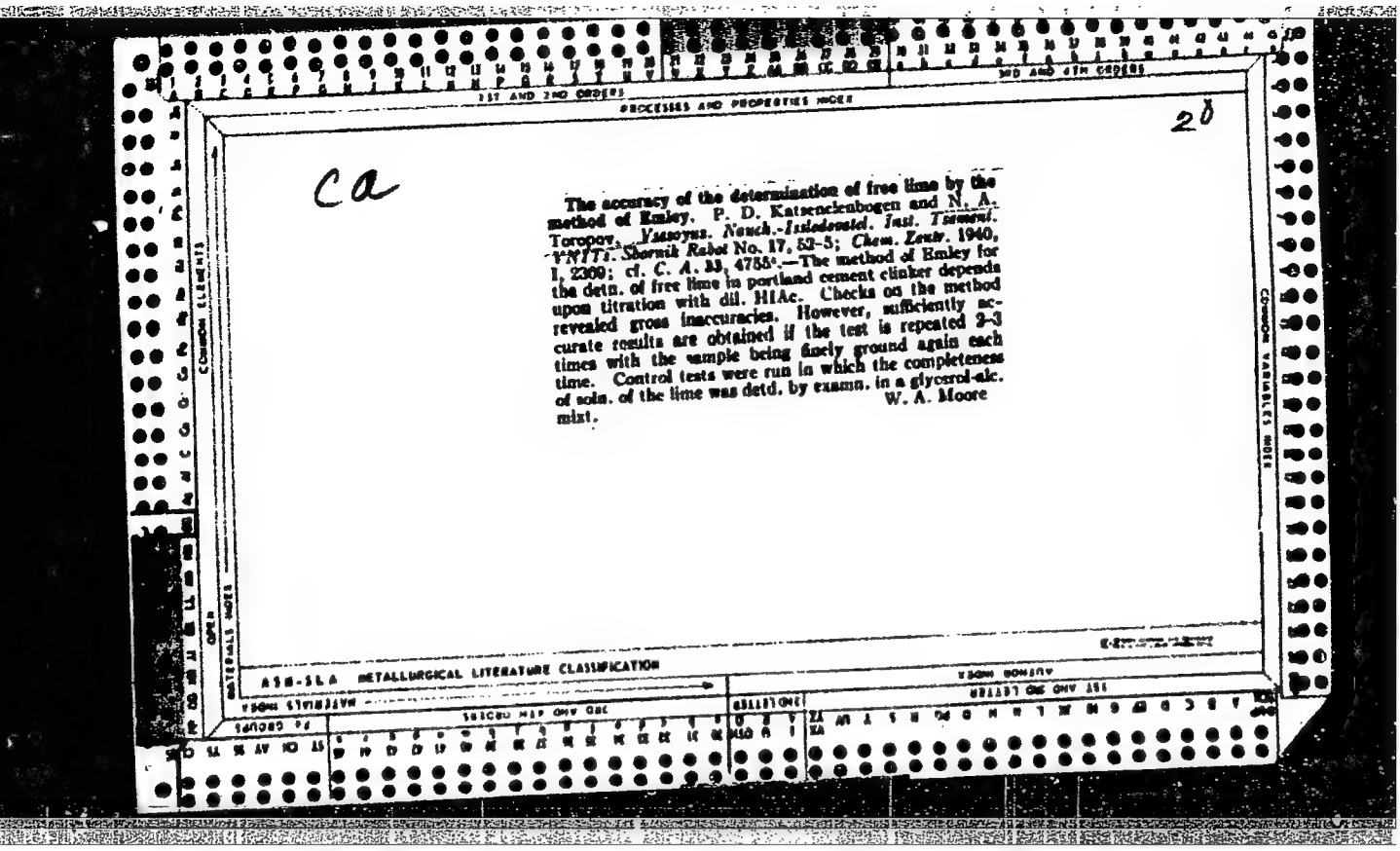


Toropov, N. A. CHEMICAL-MINERALOGICAL CHANGE IN THE TALC-MAGNESITE LINING OF A ROTARY CEMENT KILN. *Trudy Soveshchaniya Ogneuporam Materialam*, 1940, 212–17.—After 22 days in the firing zone of the rotary kiln of the Shurov cement plant, the lining showed three zones: (1) a light red zone, of the same composition as well-fired talc-magnesite brick, (2) a zone fused to a considerable extent, brownish black, and differing in composition from the first zone by a considerable amount of added oxides (mainly CaO and Al_2O_3 with some TiO_2), and (3) in contact with the burned clinker, a zone similar to the second zone in physical properties but of a chemical composition similar to that of Mg Portland cement clinker.

PC

A-1

Binary system magnesium oxide-basic subchloride. "N. A. Toropov and P. F. Konovalov (*J. Phys. Chem. Russ.*, 1940, 14, 1107—1110).—Mixtures containing <1 MgO per 1 B_2O_3 form two layers below 1165°, and their cooling curves show an endothermal transformation at 1080° and an exothermal one at 780°. MgO,B_2O_3 melts at 1191°, and $2MgO,B_2O_3$ at 1361±5°; cooling curves of their mixtures indicate transformations at 1191° and 1080°. $2MgO,B_2O_3$ melts at 1400±5° and forms eutectics at 1360±5° (B_2O_3 43·2 wt.-%) and 1360±

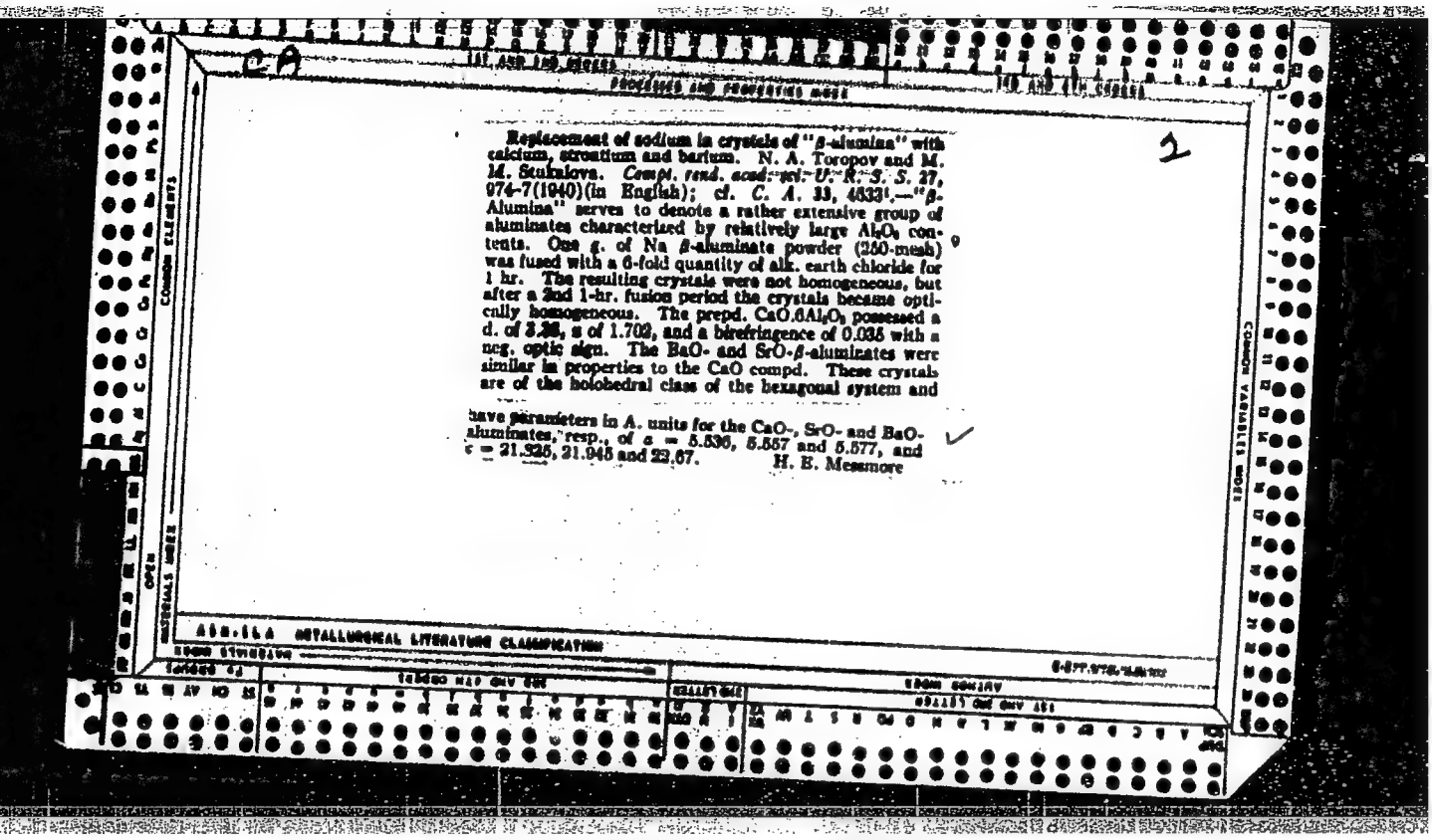


Ca

20

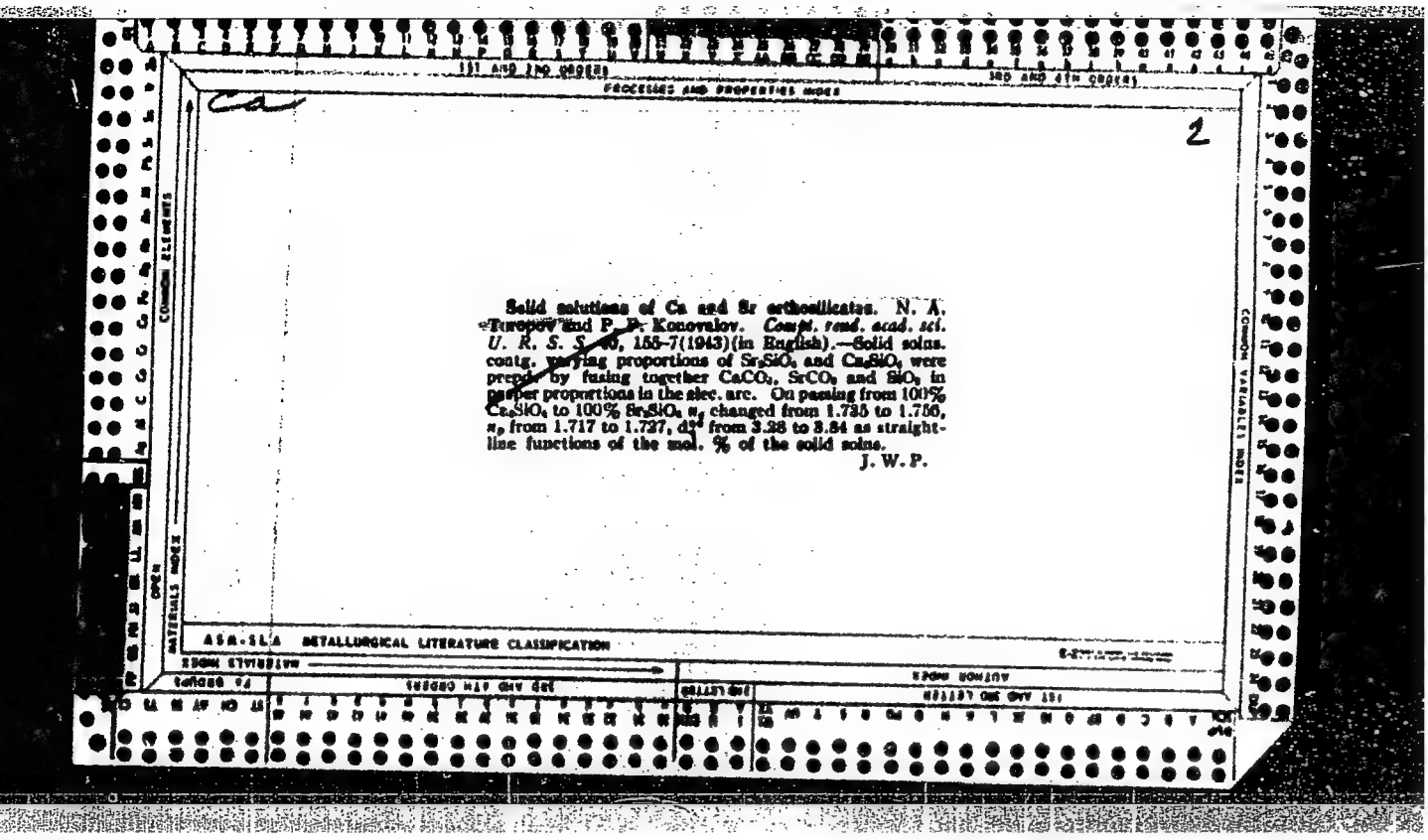
The accuracy of the determination of free lime by the method of Emley. P. D. Katsnelenbogen and N. A. Toropov. *Vsesoyuz. Nauch.-Issledovatel. Inst. Tsement. Promyt. Sbornik Rabot* No. 17, 52–5; *Chem. Zentr.* 1940, I, 2360; cf. *C. A.* 33, 4755⁶.—The method of Emley for the detn. of free lime in portland cement clinker depends upon titration with dil. HIAc. Checks on the method revealed gross inaccuracies. However, sufficiently accurate results are obtained if the test is repeated 2–3 times with the sample being finely ground again each time. Control tests were run in which the completeness of soln. of the lime was detd. by examn. in a glycerol-alc. mixt.

W. A. Moore



Replacement of sodium in crystals of "β-alumina" with calcium, strontium and barium. N. A. Toropov and M. M. Stukalova. *Compt. rend. acad. sci. U. R. S. S.* 27, 974-7(1940)(in English); cf. *C. A.* 33, 4633⁹.—"β-Alumina" serves to denote a rather extensive group of aluminates characterized by relatively large Al_2O_3 contents. One g. of Na β-aluminate powder (200-mesh) was fused with a 6-fold quantity of alk. earth chloride for 1 hr. The resulting crystals were not homogeneous, but after a 2nd 1-hr. fusion period the crystals became optically homogeneous. The prepd. $CaO.6Al_2O_3$ possessed a d. of 3.38, ε of 1.702, and a birefringence of 0.035 with a neg. optic sign. The BaO- and SrO-β-aluminates were similar in properties to the CaO compd. These crystals are of the holohedral class of the hexagonal system and have parameters in A. units for the CaO-, SrO- and BaO-aluminates, resp., of a = 5.536, 5.557 and 5.577, and c = 21.525, 21.945 and 22.67.

H. E. Messmore



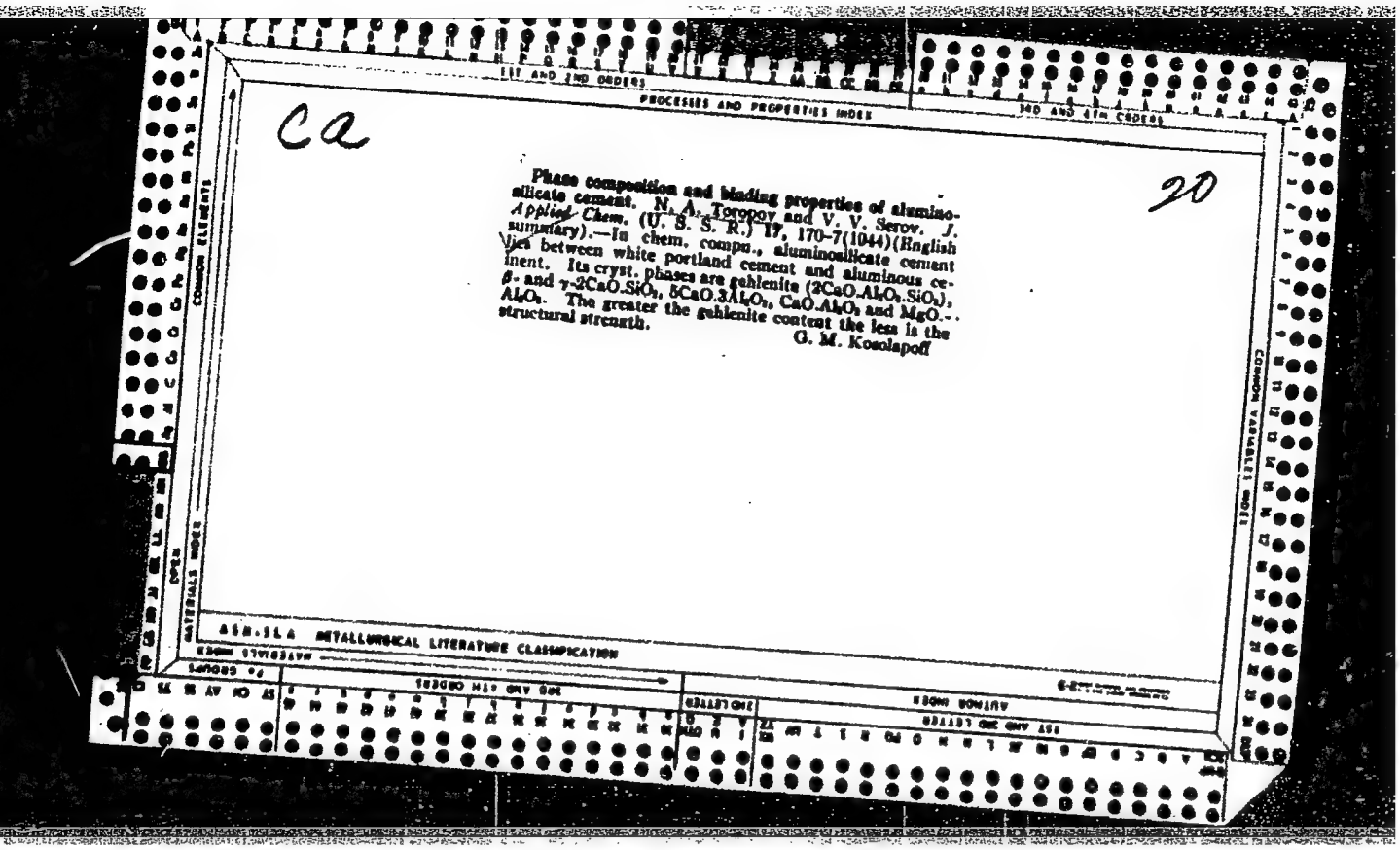
Ca

2

Solid solutions of Ca and Sr orthosilicates. N. A. Toropov and P. P. Konovalov. *Compt. rend. acad. sci. U. R. S. S.* 40, 155-7(1943)(in English).—Solid solns. contg. varying proportions of Sr_2SiO_4 and Ca_2SiO_4 were prepd. by fusing together $CaCO_3$, $SrCO_3$ and SiO_2 in proper proportions in the elec. arc. On passing from 100% Ca_2SiO_4 to 100% Sr_2SiO_4 n_g changed from 1.735 to 1.750, n_p from 1.717 to 1.727, d_4^{20} from 3.28 to 3.84 as straight-line functions of the mol. % of the solid solns.

J. W. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Ca

20

Phase composition and binding properties of aluminosilicate cement. N. A. Toropov and V. V. Serov. *J. Applied Chem.* (U. S. S. R.) 17, 170–7(1944)(English summary).—In chem. compn., aluminosilicate cement lies between white portland cement and aluminous cement. Its cryst. phases are gehlenite ($2CaO.Al_2O_3.SiO_2$), β- and γ-$2CaO.SiO_2$, $5CaO.3Al_2O_3$, $CaO.Al_2O_3$ and MgO.-. Al_2O_3. The greater the gehlenite content the less is the structural strength.

G. M. Kosolapoff

TOPOROV, N. A.

C

Review of research on the forming and constitution of clinker and of the structures of hydrated cements. N. A. Toporov. *Trudy Vsesoyuz. Soveshchaniya Zavod. Lab. Tsement. Prom.*, 3, 45–61 (1945). The following topics are reviewed: (1) liquid phase of Portland cement clinker, (2) constitution of clinker, and (3) microstructure of hydrated cements. No references. B.Z.K.

TOROPOV, N. A.

Toropov, N. A. - "A survey of the newest achievements in the area of the chemistry and petrography of cements," Trudy 4-go Vsesoyuz. soveshchaniya zavodskikh laboratoriy tsement, prom-stil, Leningrad, 1948, p. 43-69.

SO: U-3850, 16 June 53, (Letopis 'Zhurnal 'nykh Statey, No. 5, 1949).

TOROPOV, N.A., doktor tekhnicheskikh nauk, professor.

Academician D.S. Beliankin's work. TSement 14 no.6:3-4 N-D '48. (MLRA 9:5)

(Building materials)

TOROPOV, N. A.

PA 35/49T66

USSR/Metals Dec 48
Nickel Oxide
Ferric Oxide

"Solid Solutions in the System $NiO-Fe_2O_3$," N. A. Toropov, A. I. Borisenko, All-Union Sci Res Inst Giprotsement, 4 pp

"Dok Ak Nauk SSSR" Vol LXIII, No 6-pp. 705-8

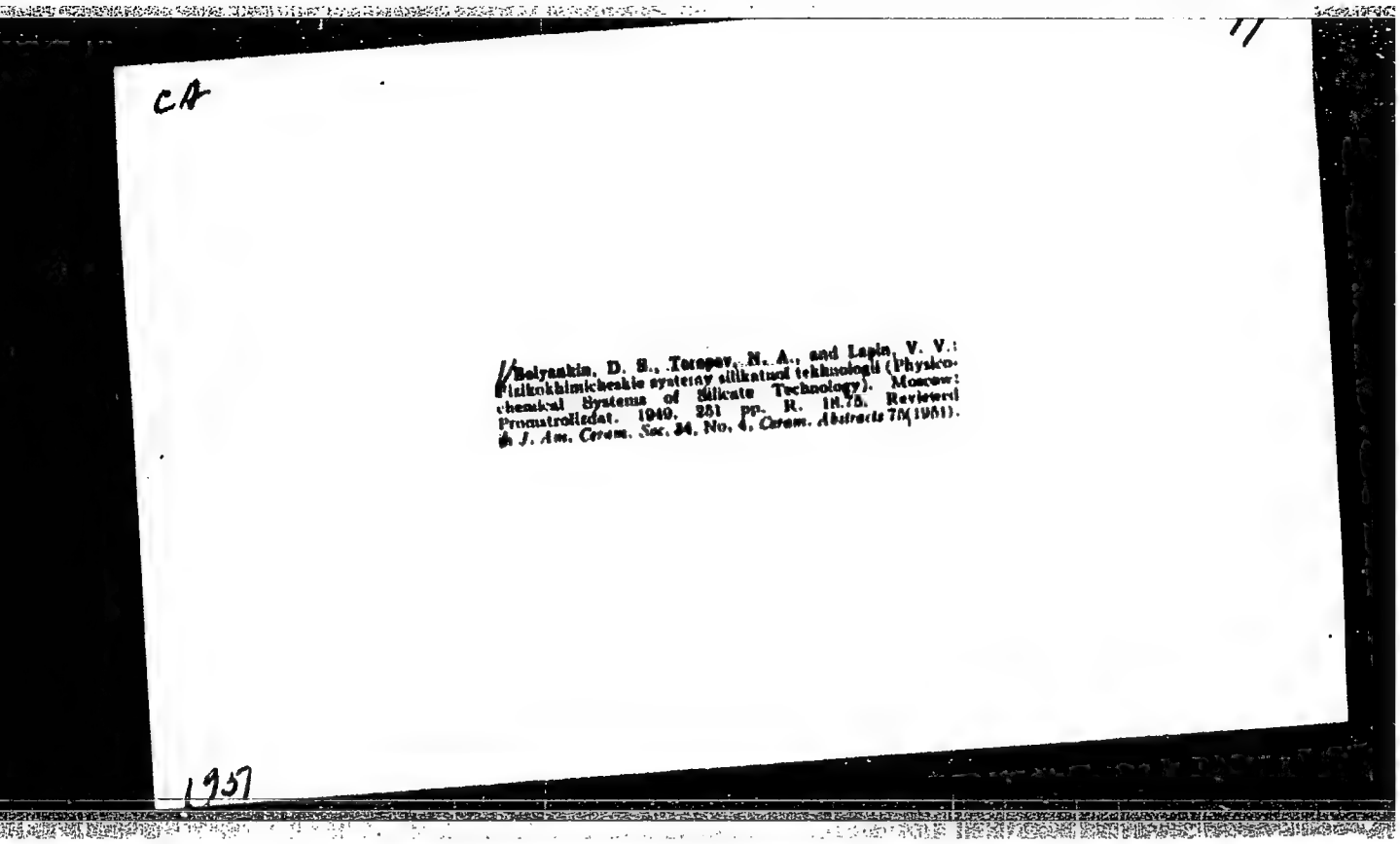
Conducted chemical, crystal-optic, and X-ray analysis of mixtures of NiO and Fe_2O_3 for various temperatures to determine temperature interval in which ferrites form. Table shows content of FeO (in %) during the heating of various mixtures in a platinum furnace for 3½ hours, and relative

[redacted] 35/49T66

USSR/Metals (Contd) Dec 48

intensity (angstroms) of Debye crystallogram lines for samples, obtained by clinkering at 1,100°. Another table shows composition of the mixture, content of NiO and Fe_2O_3 in weight, and characteristics of the mixture. Submitted by Acad D. S. Belyankin 27 Oct 48.

[redacted] 35/49T66



CA

Belyankin, D. S., Toropov, N. A., and Lapin, V. V.: Fiziko-khimicheskie sistemy silikatnoi tekhnologii (Physico-chemical Systems of Silicate Technology). Moscow: Promstroiizdat. 1949. 251 pp. R. 18.75. Reviewed in *J. Am. Ceram. Soc.* 34, No. 4, *Ceram. Abstracts* 76 (1951).

1957

TOROPOV, N. A.

SOLID SOLUTIONS IN THE SYSTEM $CoO-Fe_2O_3$. N. A. TOROPOV, E. A. PORAI-KOSHITS, AND A. I. BORISENKO. Doklady Akad. Nauk S.S.S.R. v. 66, 905-8 (1949); cf. C. A. 43, 4552b. In an equimol. mixt. of the pptd. hydroxides, ferritization is complete on 40 hrs. heating at 1100° of pellets dried at 120° and pressed under 3000 kg. /sq. cm. The thermal dissocn. $6Fe_2O_3 \rightarrow 4Fe_3O_4 + O_2$, in mixts. with CoO, is less intense than in mixts. with NiO. In the presence of excess CoO, the product obtained is porous, and contains, on microscopic exam., 2 phases, one dark-gray, the other dark-yellow. The amt. of the former decreases with decreasing CoO. With increasing Fe_2O_3 content, the color of the crystals seen in specimens etched with HNO_3 changes from dark-yellow in the equimol. compn., to yellow for $2CoO + 5Fe_2O_3$. With further increasing excess of Fe_2O_3, a new light phase appears along with the yellow crystals, attaining 45-50% in $CoO + 6Fe_2O_3$. By x-ray examn., free Fe_2O_3 is

CONTINUED

CA

6

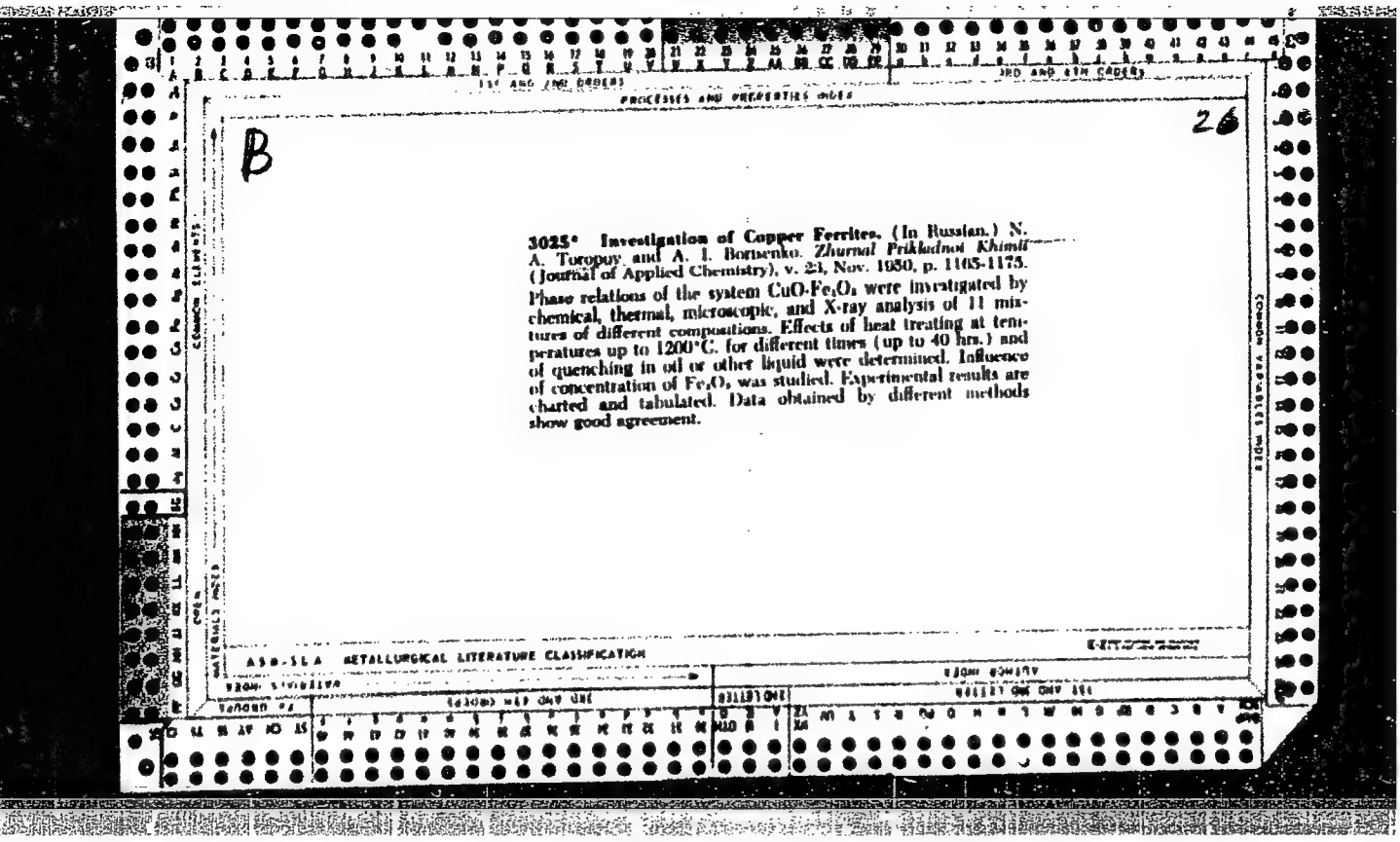
Zinc borates. N. A. Toropov and P. F. Konovalov. *Doklady Akad. Nauk S.S.S.R.* 66, 1105–8(1949); cf. *C.A.* 38, 3892⁹.—The system ZnO–B_2O_3 was investigated by means of heating curves, and the solid phases were identified by x-ray diffraction studies. Three compds. were found: $3ZnO.B_2O_3$, m. 1125°; $ZnO.B_2O_3$, m. 1000°; $ZnO.3B_2O_3$, decompg. at 900° into $ZnO.B_2O_3$ and a liquid contg. 2% ZnO. The system is characterized by having a 2-liquid-phase region extending from 3 to 48% ZnO and with a lower limit of 990°. The upper limit was not detd. but was above 2000°. There are 3 eutectics: 990°, 48% ZnO; 1010°, 58% ZnO; 1080°, 83% ZnO. n_α and n_γ are, resp.: $ZnO.B_2O_3$, 1.643, 1.676; $3ZnO.B_2O_3$, 1.669, 1.720; $ZnO.3B_2O_3$, 2.004, 2.030. Arild J. Miller

870

24

11010 **Khimiia Kremnia i Fizicheskaia Khimiia Silikatov, (The Chemistry of Silicon and the Physical Chemistry of Silicates.)** (Russian.) K. S. Evstrop'ev and N. A. Toropov. 304 pages. 1950. State Publishing House of Construction Material Literature, Moscow, U.S.S.R. (QD181.S6 Ev7)k)

A textbook, subjects covered include the structure of silicates in crystalline, vitreous and fused states; bases of the theory of constructing constitution diagrams for silicate systems and their application; and description of high-Si compounds.



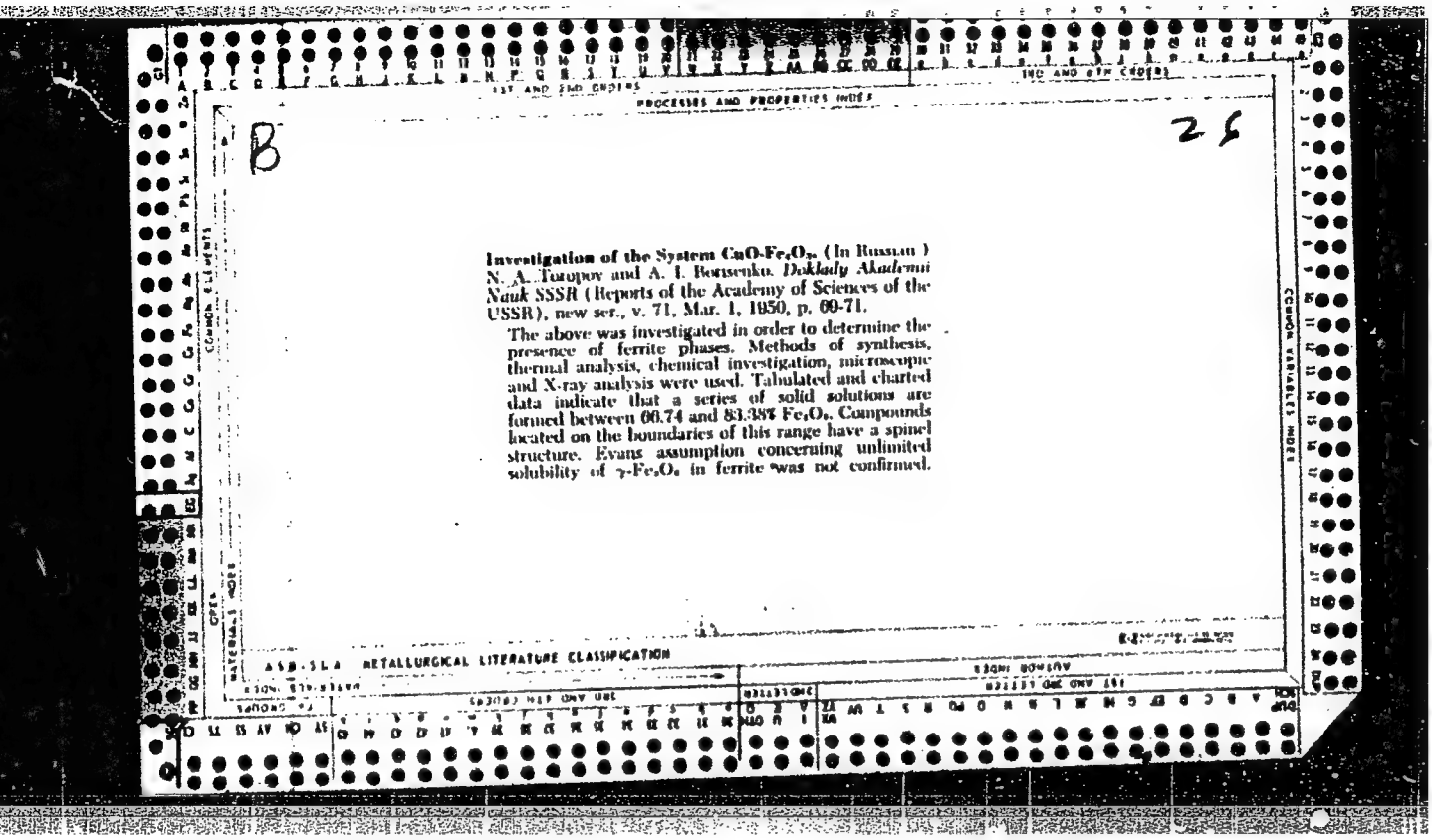
B

26

3025* **Investigation of Copper Ferrites.** (In Russian.) N. A. Toropov and A. I. Borisenko. *Zhurnal Prikladnoi Khimii* (Journal of Applied Chemistry), v. 23, Nov. 1950, p. 1165-1175.

Phase relations of the system CuO-Fe_2O_3 were investigated by chemical, thermal, microscopic, and X-ray analysis of 11 mixtures of different compositions. Effects of heat treating at temperatures up to 1200°C. for different times (up to 40 hrs.) and of quenching in oil or other liquid were determined. Influence of concentration of Fe_2O_3 was studied. Experimental results are charted and tabulated. Data obtained by different methods show good agreement.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



B

26

Investigation of the System CaO-Fe_2O_3. (In Russian) N. A. Toropov and A. I. Borisenko. *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR), new ser., v. 71, Mar. 1, 1950, p. 69-71.

The above was investigated in order to determine the presence of ferrite phases. Methods of synthesis, thermal analysis, chemical investigation, microscopic and X-ray analysis were used. Tabulated and charted data indicate that a series of solid solutions are formed between 60.74 and 83.38% Fe_2O_3. Compounds located on the boundaries of this range have a spinel structure. Evans assumption concerning unlimited solubility of γ-Fe_2O_3 in ferrite was not confirmed.

TOROPOV, N. A.

PA 160T80

USSR/Minerals - Bauxite
Silicates

11 May 50

"New Orthosilicates of Potassium and Sodium," N. A. Toropov, O. I. Arakelyan, All-Union Aluminum-Magnesium Inst, 4 pp

"Dok Ak Nauk SSSR" Vol LXXII, No 2 - p. 365

During systematic investigations of reactions in process of roasting bauxite with limestone and soda, authors observed two new crystal phases in binary system $2CaO \cdot SiO_2$-$Na_2O \cdot CaO \cdot SiO_2$. Gives characteristics of these phases, and formulas of formation of new silicates and X-ray measurements of interplanar distances.

160T80

178T85

TOROPOV, N. A.

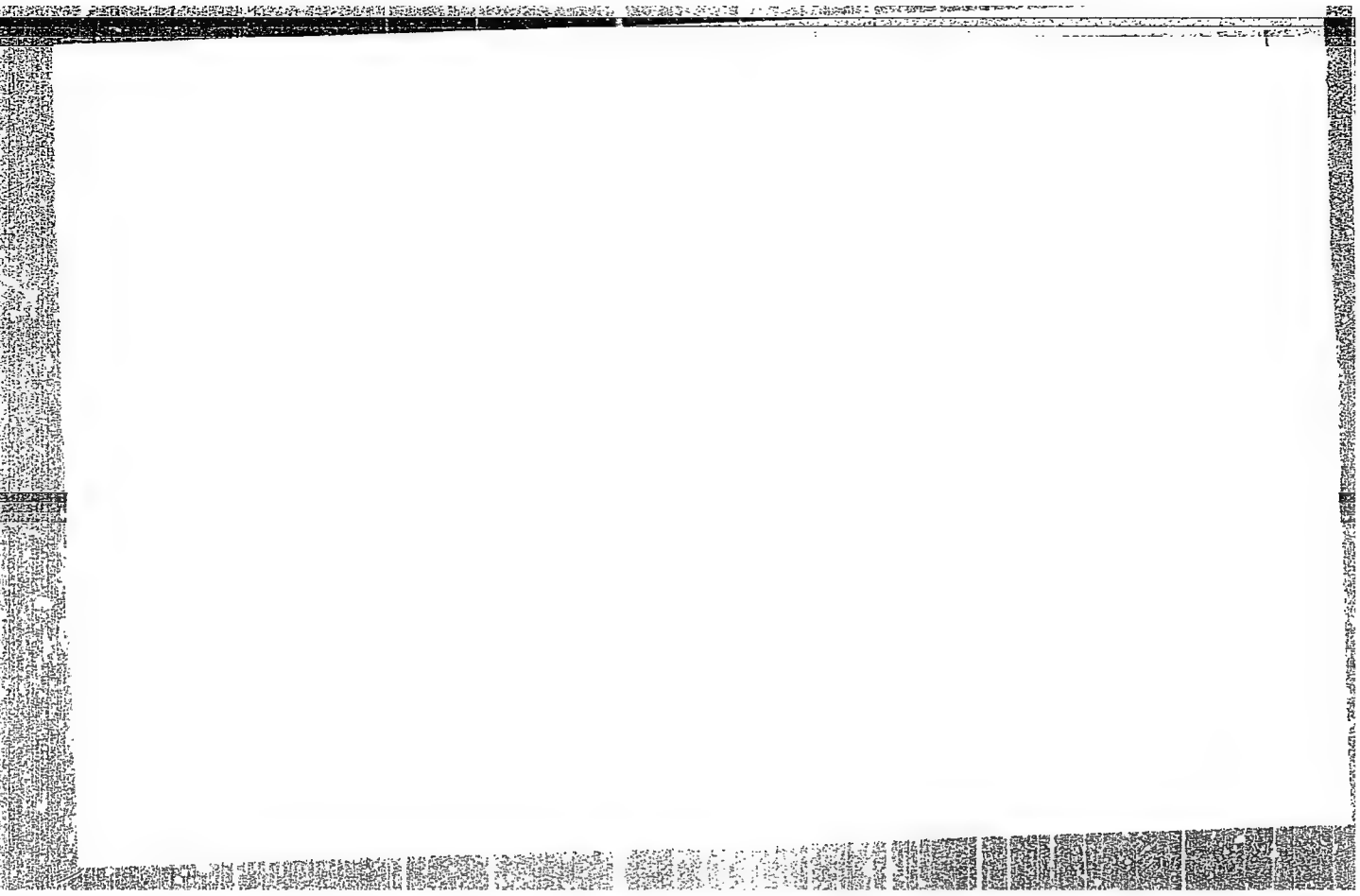
USSR/Metals - Oxides, Structure 1 Jan 51

"Solid Solutions in the Systems NiO-ZnO-Fe_2O_3 and CuO-ZnO-Fe_2O_3," N. A. Toropov, A. I. Borisenko, Leningrad Tech Inst imeni Lensoviet'

"Dok Ak Nauk SSSR" Vol LXXVI, No 1, pp 85-88

Studies 2 ternary systems. Concludes solid soln of limited concn are being realized in these systems. Mixed ferrites and ferric oxides are components of solid soln in one part of systems, and mixed ferrites and oxides of bivalent metals in the other part. Presents and discusses diagrams of both systems. Submitted 27 Oct 50 by Acad D. S. Belyankin.

178T85



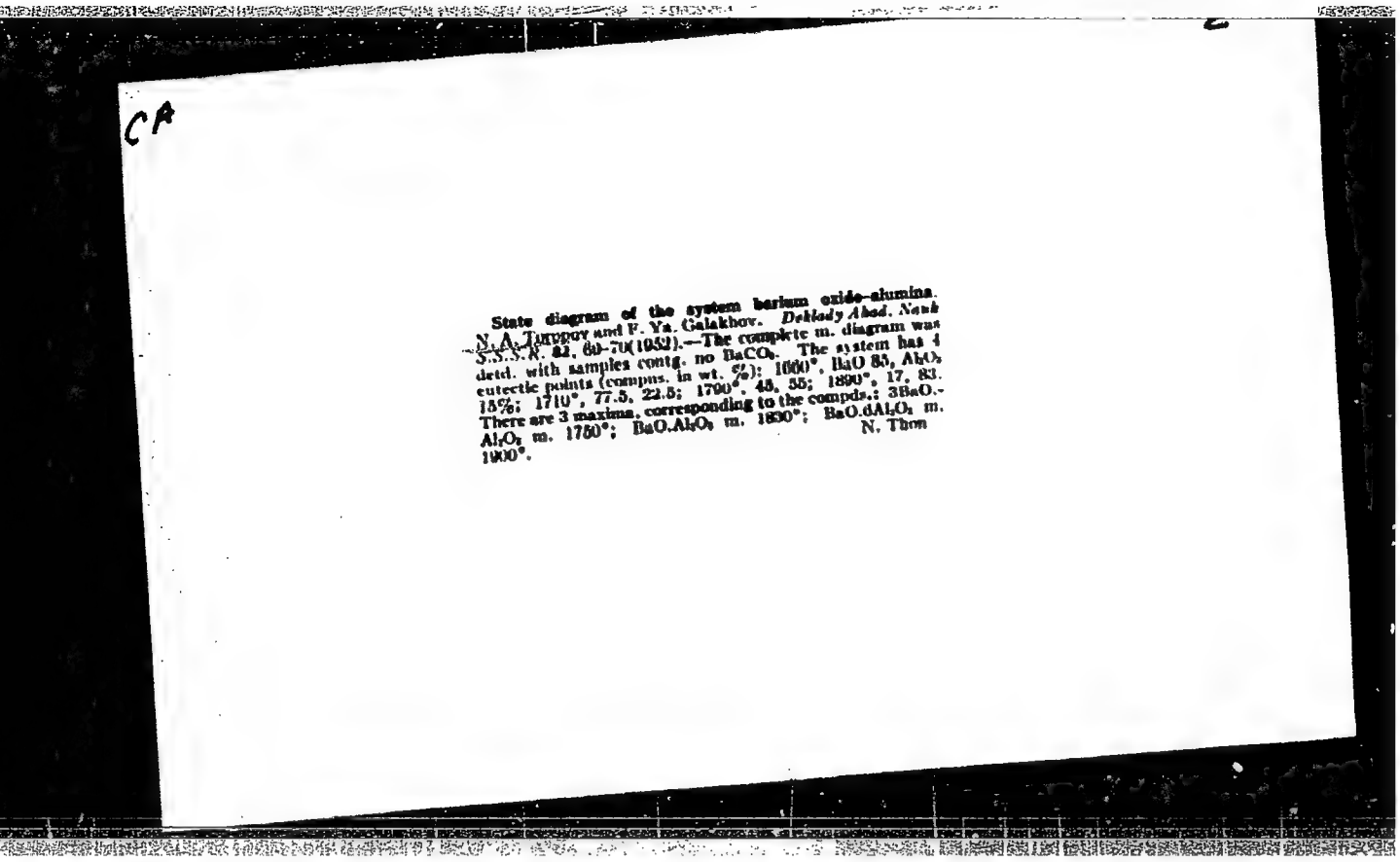
APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001756330003-3"

TOROPOV, N. A., GALAKHOV, F. YA.

Mulite

"New data on the system AL_2O_3-SiO_2." N. A. Toropov, F. Ya. Galakhov. Reviewed by Prof. S. V. Glebov, Ogneupory, 17, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952 1953, Uncl.



CA

State diagram of the system barium oxide-alumina. N. A. Toropov and F. Ya. Galakhov. *Doklady Akad. Nauk S.S.S.R.* 82, 69–70(1952).—The complete m. diagram was detd. with samples contg. no $BaCO_3$. The system has 4 eutectic points (compns. in wt. %): 1000°, BaO 85, Al_2O_3 15%; 1710°, 77.5, 22.5; 1790°, 45, 55; 1890°, 17, 83. There are 3 maxima, corresponding to the compds.: $3BaO.Al_2O_3$ m. 1760°; $BaO.Al_2O_3$ m. 1830°; $BaO.6Al_2O_3$ m. 1900°.

N. Thon

TOROFOV, N. A.

USSR/Chemistry - Abrasives, Oxide Magnets 1 Feb 52

"Solid Solutions in the System ZnO - Fe_2O_3." N. A. Toropov, A. I. Borisinko

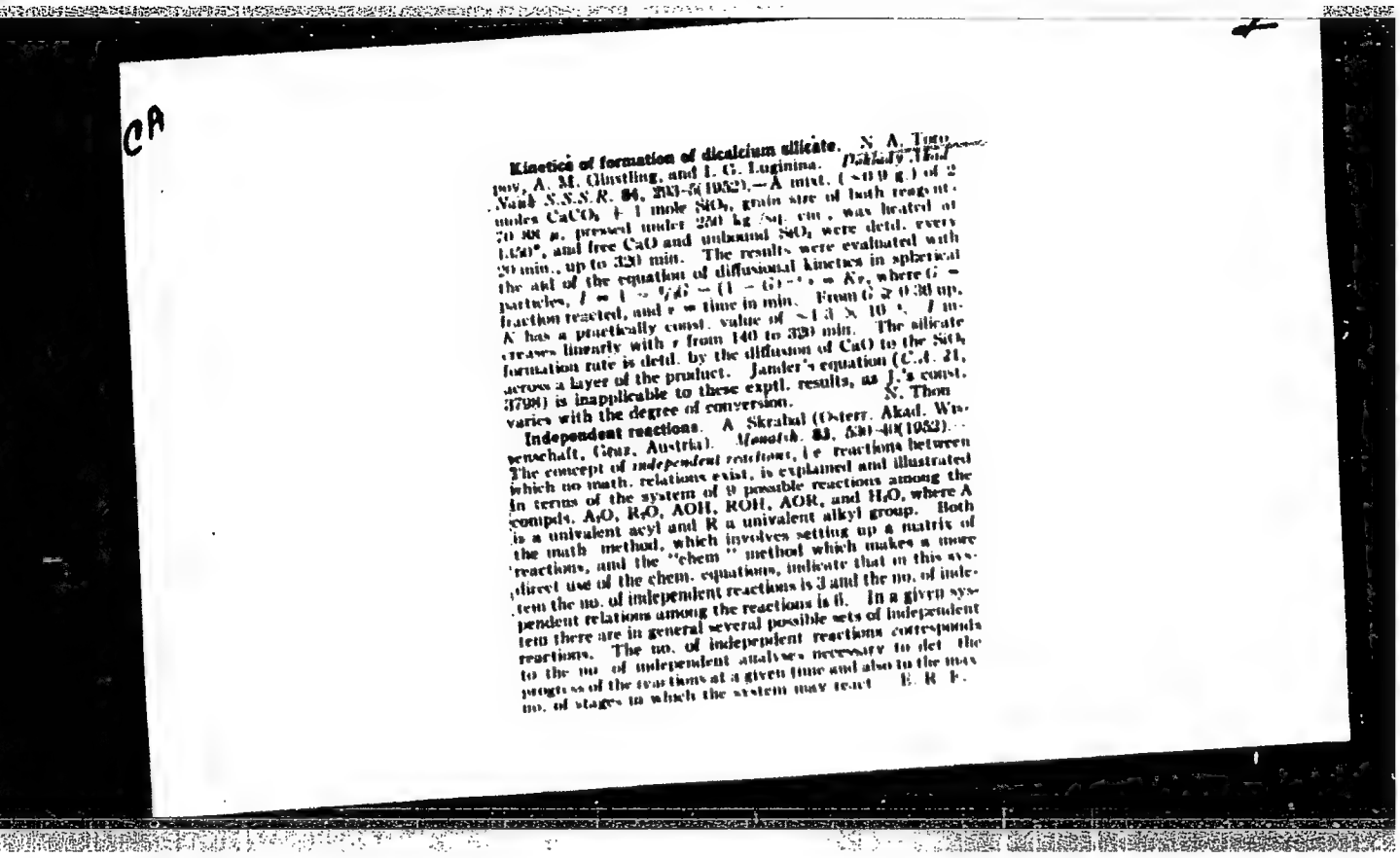
"Dok Ak Nauk SSSR" Vol LXXXII, No 4, pp 607-609

The cryst phases in the system ZnO - Fe_2O_3 are examd microscopically and by X-ray diffraction. The compns studied were ZnO-Fe_2O_3, 2ZnO 3Fe_2O_3, 2ZnO-Fe_2O_3, and others. Comparison of results of X-ray study of the synthesized zinc ferrite with those of New Jersey franklinite shows the 2 substances to be analogous. Compns contg 66,24 - 83.07% Fe_2O_3 by wt form homogeneous solid solns on being heated to

213T19

1,100°. Compns lying within the limits of a homogenous ferrite phase exhibit spinel structure, $ZnFe_2O_4$ (zinc ferrite) is an important ingredient of oxide magnets.

213T19



CA

Kinetics of formation of dicalcium silicate. N. A. Toro-pov, A. M. Glinstling, and I. G. Luginina. *Doklady Akad. Nauk S.S.S.R.* **86**, 353–6 (1952).—A mixt. (~0.9 g.) of 2 moles $CaCO_3$ + 1 mole SiO_2, grain size of both reagents 70–88 μ, pressed under 250 kg./sq. cm., was heated at 1,150°, and free CaO and unbound SiO_2 were detd. every 30 min., up to 330 min. The results were evaluated with the aid of the equation of diffusional kinetics in spherical particles, $f = 1 - \sqrt[3]{G} - (1 - G)^{2/3} = Kτ$, where G = fraction reacted, and $τ$ = time in min. From $G \geq 0.30$ up, K has a practically const. value of $\sim 1.3 \times 10^{-4}$, f increases linearly with $τ$ from 140 to 330 min. The silicate formation rate is detd. by the diffusion of CaO to the SiO_2 across a layer of the product. Jander's equation (*C.A.* **21**, 3798) is inapplicable to these exptl. results, as f's const. varies with the degree of conversion. *S.* Thon

Independent reactions. A. Skrabal (Osterr. Akad. Wissenschaft, Graz, Austria). *Monatsh.* **83**, 530–40 (1952).—The concept of *independent reactions*, i.e. reactions between which no math. relations exist, is explained and illustrated in terms of the system of 9 possible reactions among the compds. A_2O, R_2O, AOH, ROH, AOR, and H_2O, where A is a univalent acyl and R a univalent alkyl group. Both the math. method, which involves setting up a matrix of reactions, and the "chem." method which makes a more direct use of the chem. equations, indicate that in this system the no. of independent reactions is 3 and the no. of independent relations among the reactions is 6. In a given system there are in general several possible sets of independent reactions. The no. of independent reactions corresponds to the no. of independent analyses necessary to det. the progress of the reactions at a given time and also to the max. no. of stages in which the system may react. E. R. F.

TOROPOV, N.A.; BORISENKO, A.I.

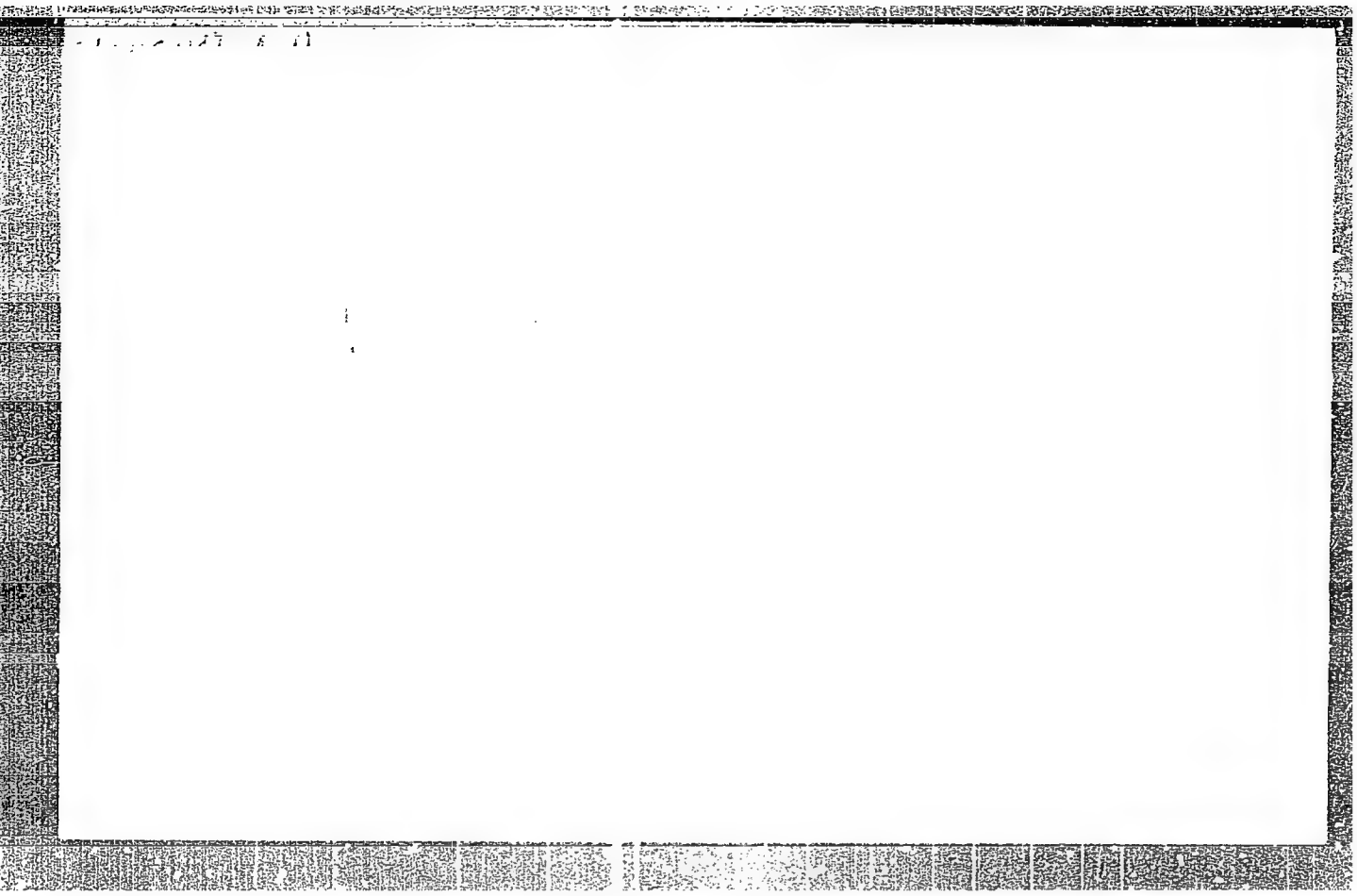
Physicochemical study of solid solutions formed by orthosilicates of calcium and barium. (In: Soveshchanie po eksperimental'noi mineralogii i petrografii. 4th, Moscow, 1952. Trudy, Moskva, 1953. No.2, p.214-229). (MLRA 7:3)

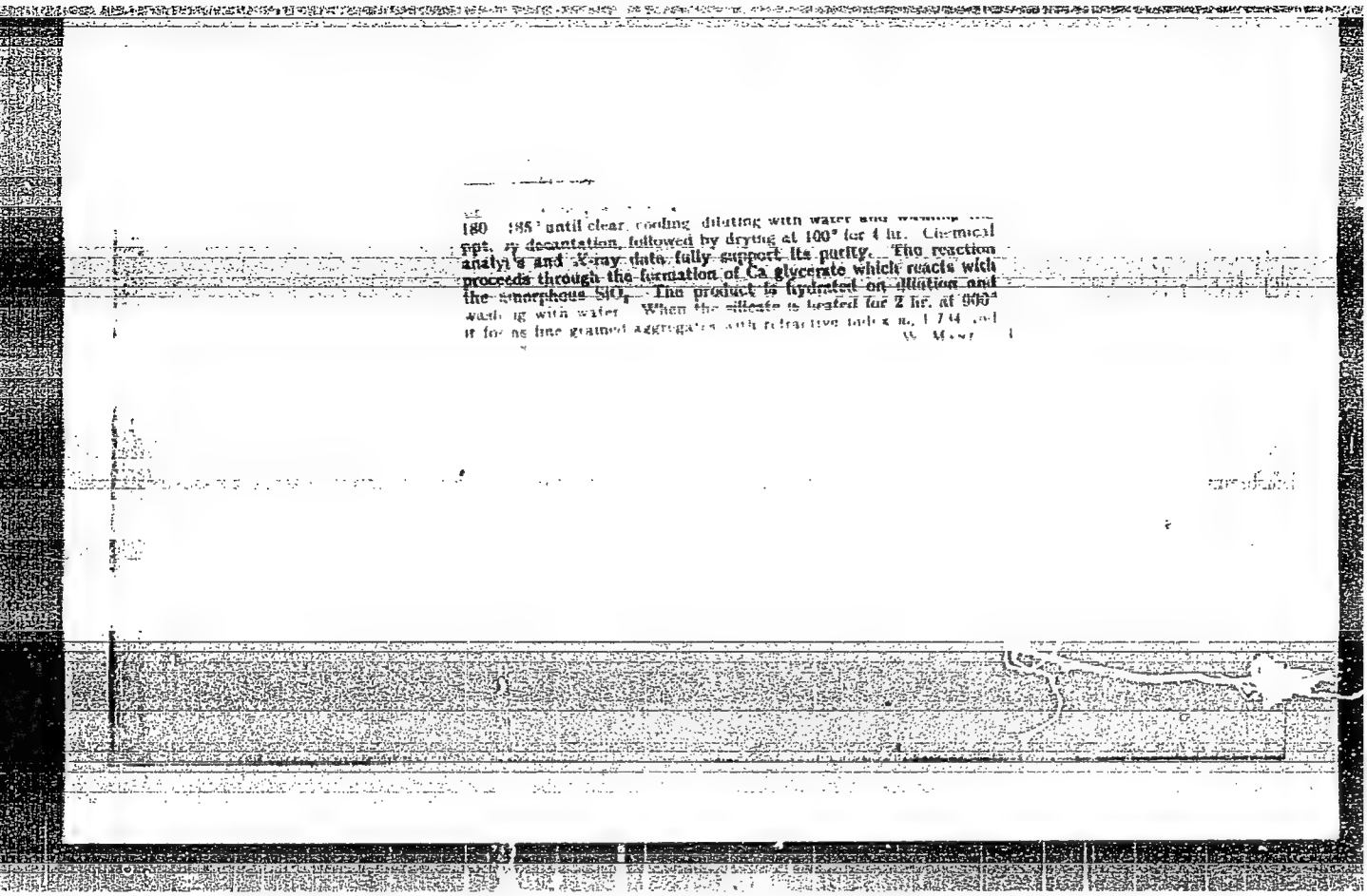
1. Fiziko-khimicheskaya laboratoriya Instituta khimii silikatov Akademii nauk SSSR. (Silicates) (Systems (Chemistry)) (Solutions, Solid)

TOROPOV, Nikita Aleksandrovich, 1908- BULAK, L.N.; CHETVERIKOV, S.D., redaktor.

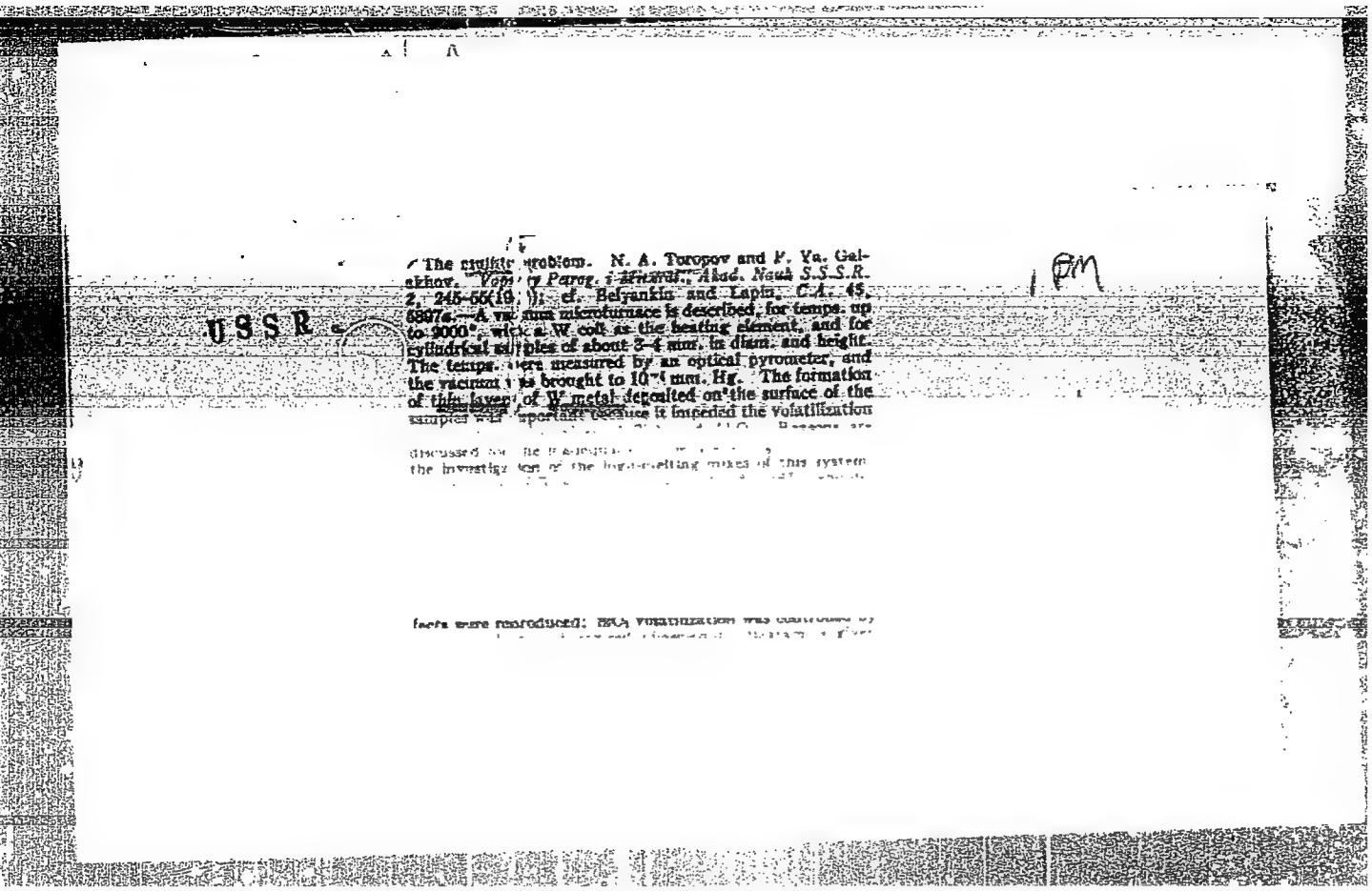
[Course in mineralogy and petrography and the principles of geology] Kurs mineralogii i petrografii s osnovami geologii. Pod red. S.D.Chetverikova. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1953. 486 p. (MLRA 7:1)

(Mineralogy) (Petrology) (Geology, Stratigraphic)





180 185° until clear, cooling, diluting with water and [illegible] ppt. by decantation, followed by drying at 100° for 4 hr. Chemical analysis and X-ray data fully support its purity. The reaction proceeds through the formation of Ca glycerate which reacts with the amorphous SiO_2. The product is hydrated on dilution and washing with water. When the silicate is heated for 2 hr. at 965° it forms fine grained aggregates with refractive index n_D 1.714 and

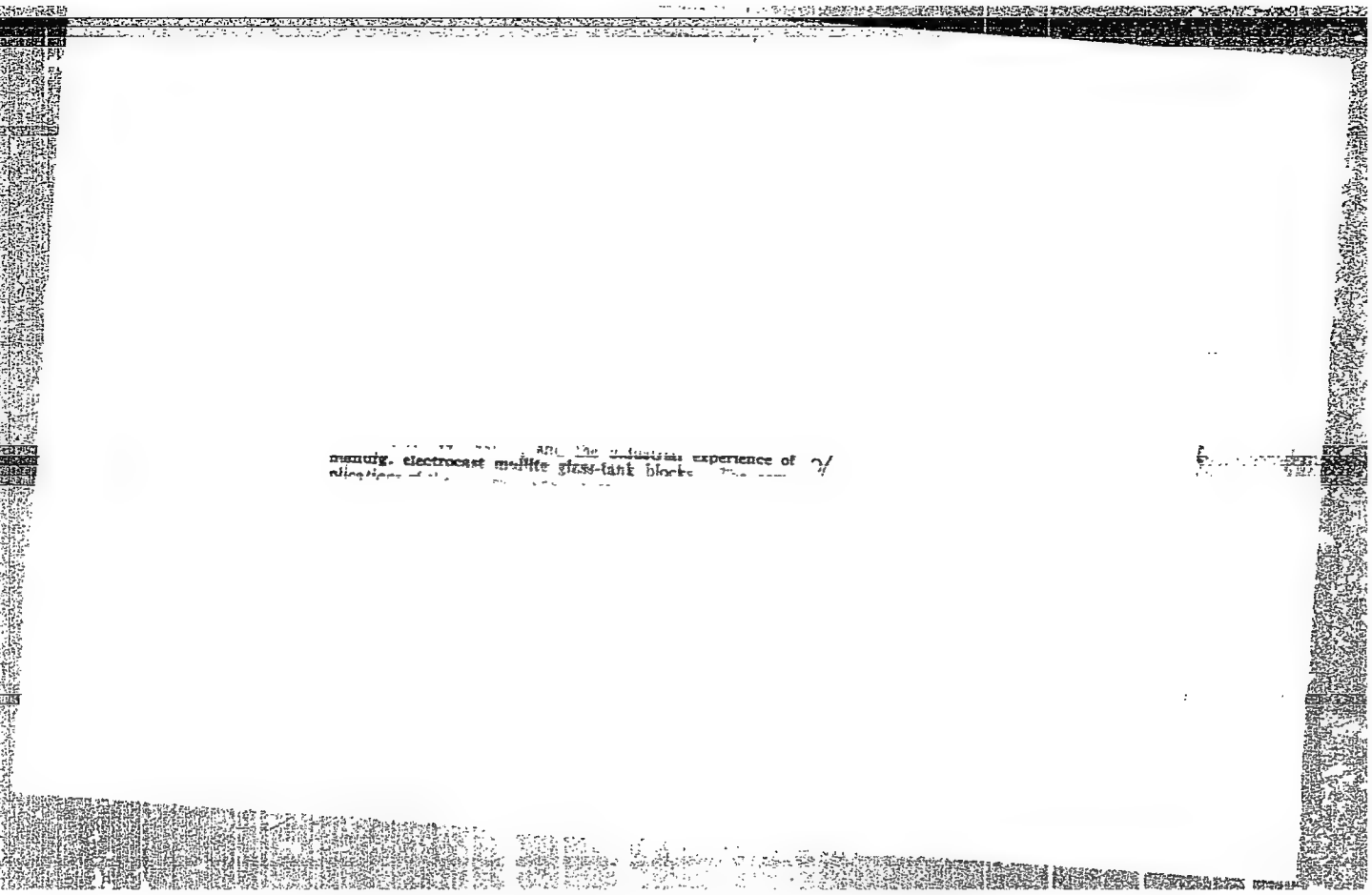


USSR

The crystallic problem. N. A. Toropov and F. Ya. Galakhov. *Vestnik Petrog. i Mineral., Akad. Nauk S.S.S.R.* 2, 245-55(19); cf. Belyankin and Lapin, *C.A.* 45, 6897e.—A vacuum microfurnace is described, for temps. up to 9000°, which a W coil as the heating element, and for cylindrical samples of about 3–4 mm. in diam. and height. The temps. were measured by an optical pyrometer, and the vacuum was brought to 10^{-4} mm. Hg. The formation of thin layers of W metal deposited on the surface of the sample and, because it impeded the volatilization

discussed [illegible] the investigation of the high-melting mixts. of this system

facts were reproduced: [illegible] volatilization was [illegible]



TOROPOV, N.A., professor; VOL'FSON, S.L., dotsent.

Intensification process of clinker firing. TSement no.4:12-16 Jl-Ag '53.
(MLRA 6:8)
(Cement kilns)

TOROPOV, N.A.

Chemical Abstracts
May 25, 1954
Cement, Concrete and
other Building Materials

The binding of calcium oxide in burning portland cement raw mixes, as a function of the size of granules. N. A. Toropov and I. C. Lugining. *Silikattech.* 4, 470-1(1953); cf. *C.A.* 48, 972h.—For a special study of the optimum conditions for accelerated burning of portland cement, the authors detd. the functional relations between the size of granules from the raw mix and the temp. distribution in a kiln, the time of exposure to the firing temps. in the sintering zone, finally the effects of addns. of NaF or CaF_2. The degree of reaction of free CaO with the ingredients of the raw mix is measured by analytical methods and controlled under the microscope. The firing process is distinctly accelerated by reducing the diam. of the raw mix granules from 5 to 1.25 mm. The mineralizing effects of the fluorides are better for relatively lower firing temps., while at higher temps. their volatilization is marked. The time for a complete clinkerization is for granules of 1.25 mm. diam. at 1600° only 3.5 min., and in the presence of fluorides (for a clinker rich in $2CaO.SiO_2$) even only 10–15 sec. Industrial kilns, with granules of more than 5 mm. in diam., require in general a sintering time at 1500° of 5 to 7 min., and if CaF_2 was added, only of 1.5 to 3 min. In the last sintering period, the rate of CaO binding in the clinker minerals is distinctly decreased. It is important to know that granules of less than 5 mm. in diam. in most industrial kilns are unnecessarily retained in the sintering zone.

W. Wittels

TOROPOV, N. A., Prof.; LUGINAN, I. G.

Cement

Effect of quick heating on the formation of cement clinker. TSement 19, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

TOROPOV, N.A.

Item 2

Effect of the grain size of raw materials on assimilation of CaO during burning of portland cement. N. A. Toropov and I. G. Lukmina. *Tsement* 19, No. 2, 17-22(1953).—With decreasing grain size, assimilation of CaO increases considerably. Mineralizers (NaF and CaF_2) exert an accelerating influence; however, the effect is less the higher the temp. and the smaller the grain size. By decreasing grain size to 1.25 mm., burning at 1600° is reduced to 3.5 min. for av. clinker and to 10–15 sec. for belite clinker with addn. of mineralizers. However, rise in temp. to 1600° is not always possible. The grain size of the product from the rotary kiln is diverse. Of the total clinker, 52% by wt. were grains < 5.00 mm. In 50% of the mixt., clinker formation is completed in 5–7 min. after entrance into the burning zone. However, the presence of large grains favors the increase of CaO in the total mass of clinker. When burning av. clinker with CaF_2, assimilation of CaO in small grains is completed in 1.5–3.0 min. in the burning zone; for large grains, the burning time is increased 4–5 times.

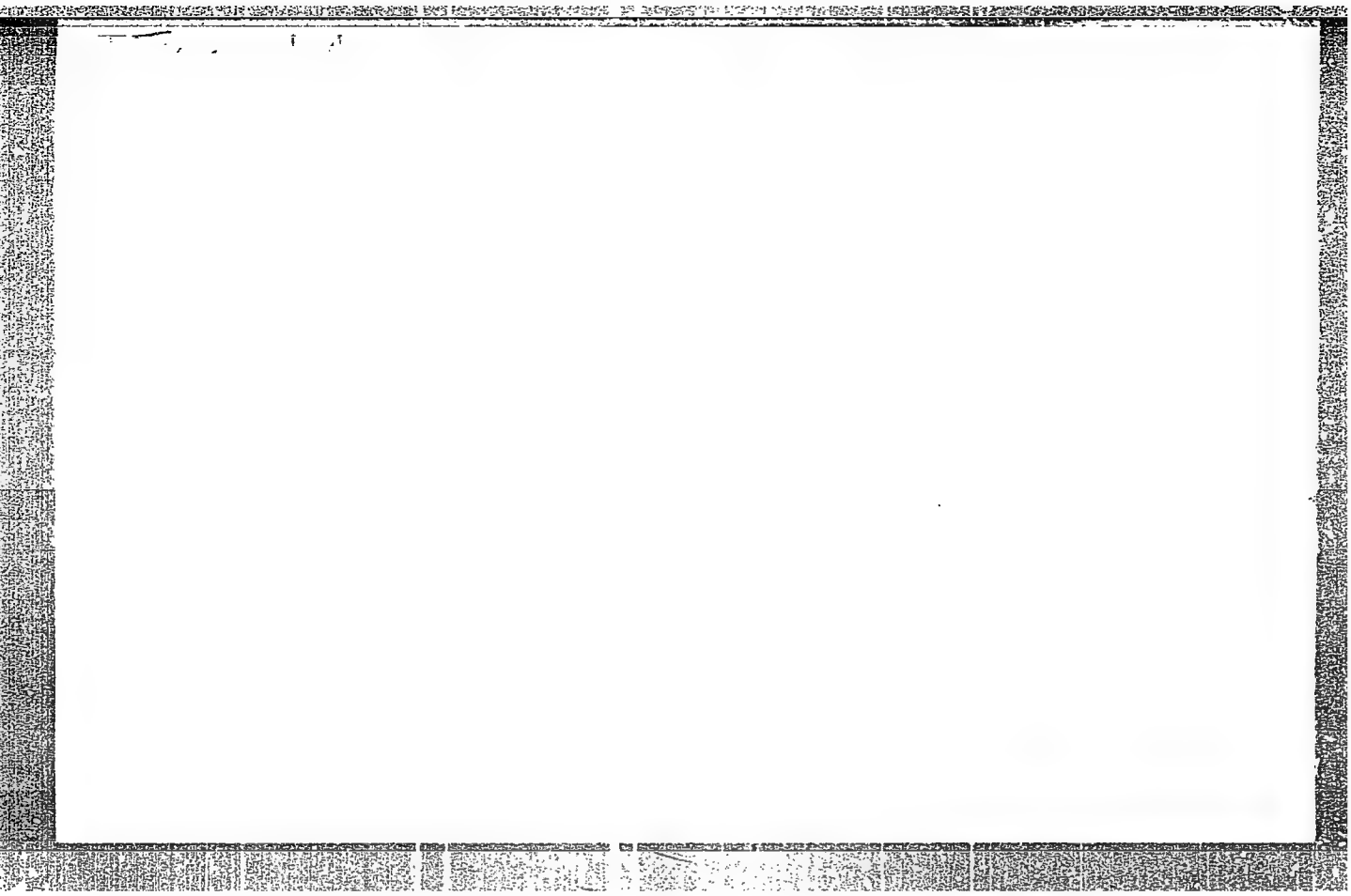
B. Z. Kamich

TOROPOV, N. A.

(2)

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Cement, Concrete, and Other Building Materials

Intensifying the firing of clinker. N. A. Toropov and G. L. Vol'fson. *Tsement* 19, No. 4, 12-16(1953).—Two portland-cement mixts. differing only in the content of di- and tri-Ca silicates were fired at 1200 and 1300° with 0.05, 0.025, and 0.012 g.-equivs. of fluorides and fluosilicates (superphosphate by-products) per 100 g. of the cement mixt. The fluosilicates and fluorides proved more beneficial than fluorspar. The fluosilicates were, in turn, more effective than the fluorides of the corresponding cations. Optimum dosage of fluosilicate was 0.012 g.-equiv. Strength of the cement specimens was not lowered by these admixts. B. Z. Kamich



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TOROPOV, N.A.

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(4)

3656* Phase Composition and Certain Ferromagnetic Properties of Manganese-Zinc Ferrites. (Russian.) N. A. Toropov, L. I. Rabkin, E. Zh. Freidenfel'd, and B. Sh. Epshtein. *Zhurnal Prikladnoi Khimii*, v. 26, no. 9, Sept. 1953, p. 982-990. Describes chemical, microscopic, X-ray, and magnetic studies of synthesized ferrites. Tables, diagrams, graphs. 9 ref.

11/19/54

1. TOROPOV, N. A., GALAKHOV, F. YA., BONDAR, Y. A.

2. USSR (600)

4. Aluminum Silicates

7. Structural diagram of the ternary system $BaO-Al_2O_3-SiO_2$. Dokl. AN SSSR 89, no. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.

TOROPOV, N. A. USSR.

Investigation of the system tricalcium silicate-tricalcium phosphate. N. A. Toropov, A. I. Borisenko, and P. V. Sumskova. *Doklady Akad. Nauk S.S.S.R.*, 92 [5] 1015–18 (1953).—Disks made from mixtures of $3CaO \cdot SiO_2$ (I) and $3CaO \cdot P_2O_5$ (II) were heated at 1450°C., and every 10 min. a different disk was removed and subjected to microscopic and chemical analysis. Disks prepared of 98 to 50 mole % I and 2 to 50 mole % II were found to consist of tricalcium silicate, free CaO, solid solutions of silicophosphates, and tetracalcium phosphate (III), in amounts depending on the original proportions of I and II. Free CaO increased with time, reaching a maximum in 60 min. At this point, tricalcium silicate, dicalcium silicate, CaO, tricalcium phosphate, and traces of tetracalcium phosphate were observed. After 70 min. at 1450°C., free CaO dropped to a minimum. Free CaO is formed in accordance with $3CaO \cdot SiO_2 \rightarrow CaO + 2CaO \cdot SiO_2$ and only in the presence of II. Detection of III is indicative of the reaction $3CaO \cdot P_2O_5 + CaO \rightarrow 4CaO \cdot P_2O_5$. After 90 min., silicocarnotite was also detected and there was a further increase in the amount of free CaO, reaching a constant limit at 100 to 140 min. The final content of free CaO depended on the composition of the disks, increasing to 11.47 wt. % for 0 to 20 mole % II and dropping to 0 for 60 mole % and more II. In all cases, free CaO was less than that expected from decomposed I. This was traced to solution of CaO in silicocarnotite and nagelschmidtite with the formation of more basic silicophosphates. B.Z.K.

TOROPOV, N. A.

614.383
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Fiziko-khimicheskiye sistemy silikatnoy tekhnologii (Physico-chemical systems of silicate technology, by) D. S. Belyankin, V. V. Lapin, N. A. Toropov. Moskva, Promstroyizdat, 1954.
370 p. diagrs., graphs, tables.
Includes bibliographies.

ТОРОПОВ, Н. А.

Diagram of state for the ternary system BaO–Al_2O_3–SiO_2. N. A. Toropov, F. Ya. Galakhov, and I. A. Bondar. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1954, 647–65 (Engl. translation).—See *C.A.* 49, 6711*h*. B.M.R. CH

(2)

TOROPOV, N.A.

TOROPOV, N.A.; GALAKHOV, F.Ya.; BONDAR', I.A.

Equilibrium diagram of the ternary system: $BaO - Al_2O_3 - SiO_2$.
Izv.AN SSSR Otd.khim. nauk no.5:753-764 S-O '54. (MLRA 8:3)

1. Institut khimii silikatov Akademii nauk SSSR.
(Phase rule and equilibrium)(Aluminum silicates)
(Barium salts)

TOROPOV, N. A.

Investigation of cements with ionization x-ray analysis. N. A. Toropov, P. F. Konovalov, A. I. Efremov, and G. V. Andr'eva. *Tsement* 20, No. 3, 17–20(1954).—Processes of dissocn. of limestone, transformations of kaolinite, and formation of dicalcium silicate were investigated with an ionization x-ray installation comprising source of x-rays (x-ray tube), goniometer, high-temp. furnace, receiver of x-ray radiation (gas amplifier), electrometric amplifier of d.c., and recorder of ionization curves. Dissocn. of carbonate occurs somewhat above 500° and is complete at 700°. At 900°, dicalcium silicate changes from the γ-modification into a new α'-modification. At 500°, kaolinite undergoes structural changes and becomes amorphous; it remains amorphous to 900–1000°, after which mullite starts to form slowly and then speeds up at 1200°. At 1200°, α-cristobalite forms from excess amorphous silica.

B. Z. Kamieff

(3)

TOROPOV N A

Interaction of calcium phosphate with clinker materials. N. A. TOROPOV AND A. I. BORISENKO. *Tsement*, 20 [6] 10–14 (1954).—The study dealt with the high-temperature reactions of tricalcium phosphate with the synthetic clinker materials $2CaO \cdot SiO_2$, $3CaO \cdot SiO_2$, $4CaO \cdot Al_2O_3 \cdot Fe_2O_3$, $CaO \cdot 2Al_2O_3$, Fe_2O_3, $3CaO \cdot SiO_2 + 2CaO \cdot SiO_2$, and $2CaO \cdot SiO_2 + 3CaO \cdot SiO_2 + 4CaO \cdot Al_2O_3 \cdot Fe_2O_3$. Incomplete binding of CaO during burning of raw cement mixtures containing P_2O_5 is due to thermal decomposition of tricalcium silicate in the presence of P_2O_5, with the formation of dicalcium silicate and free CaO. The influence of tricalcium phosphate on a mixture of dicalcium and tricalcium silicates during burning is determined by the proportion of these silicates in the mixture. The permissible content of P_2O_5 increases with decreasing content of tricalcium silicate in the clinker. The content of P_2O_5 should be established on the basis of physical tests. The behavior of mixtures of tricalcium silicate with tetracalcium aluminoferrite in the presence of additions of tricalcium phosphate is analogous to the behavior of tricalcium silicate. Tricalcium phosphate does not react with Ca aluminoferrites although it dissolves therein during melting. The P_2O_5 is in the clinker as a component of belite, which dissolves Ca silicophosphates, and in the ferruginous phase, which dissolves up to 28% $3CaO \cdot P_2O_5$ at 1500°C. Change in the appearance of alite due to the presence of P_2O_5 in mixtures is determined by nonuniformity of crystals, indicating the start of decomposition of $3CaO \cdot SiO_5$. Use of carbonates containing P_2O_5 should be limited to the production of belite cements. B. Z. K.

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TOROPOV, N.A.; ARAKELYAN, O.I.

Crystallization of γ-alumina from melts of the system: NaF - AlF_3 - Al_2O_3. TSvet. met. 27 no.1:57-58 Ja-F '54. (MLRA 10:9)
(Alumina) (Crystallization)

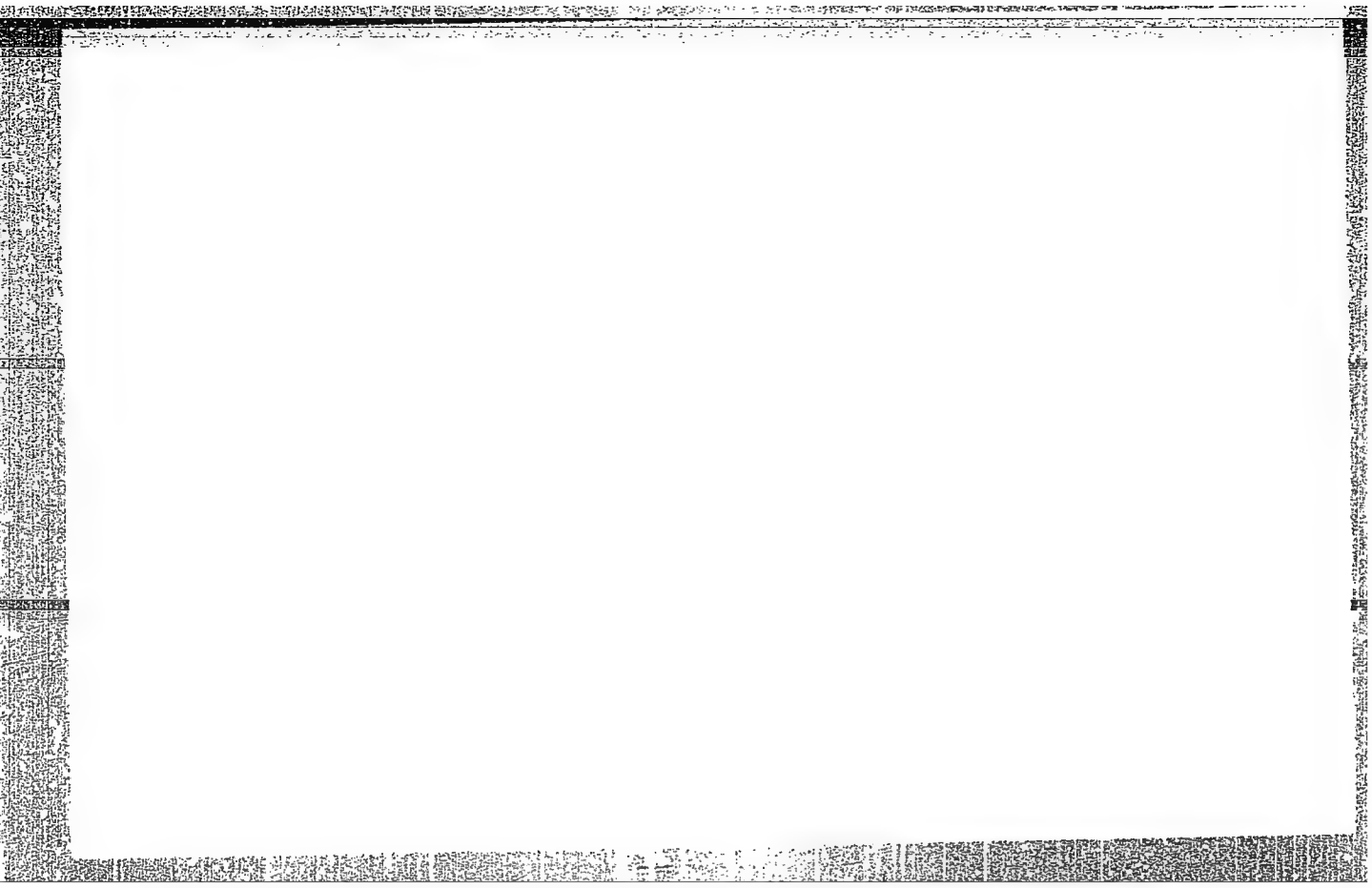
TOROPOV, N. A.

TOROPOV, N.A.; KONOVALOV, P.F.; YEFREMOV, A.I.; ANAN'YEVA, G.V.

Use of the high-temperature X-ray ionization method for studying processes that take place in alumina production. TSvet.met. 27 no.2:37-42 Mr-Ap '54. (MIRA 10:10)

1. Giprotsement.

(Alumina) (X rays)



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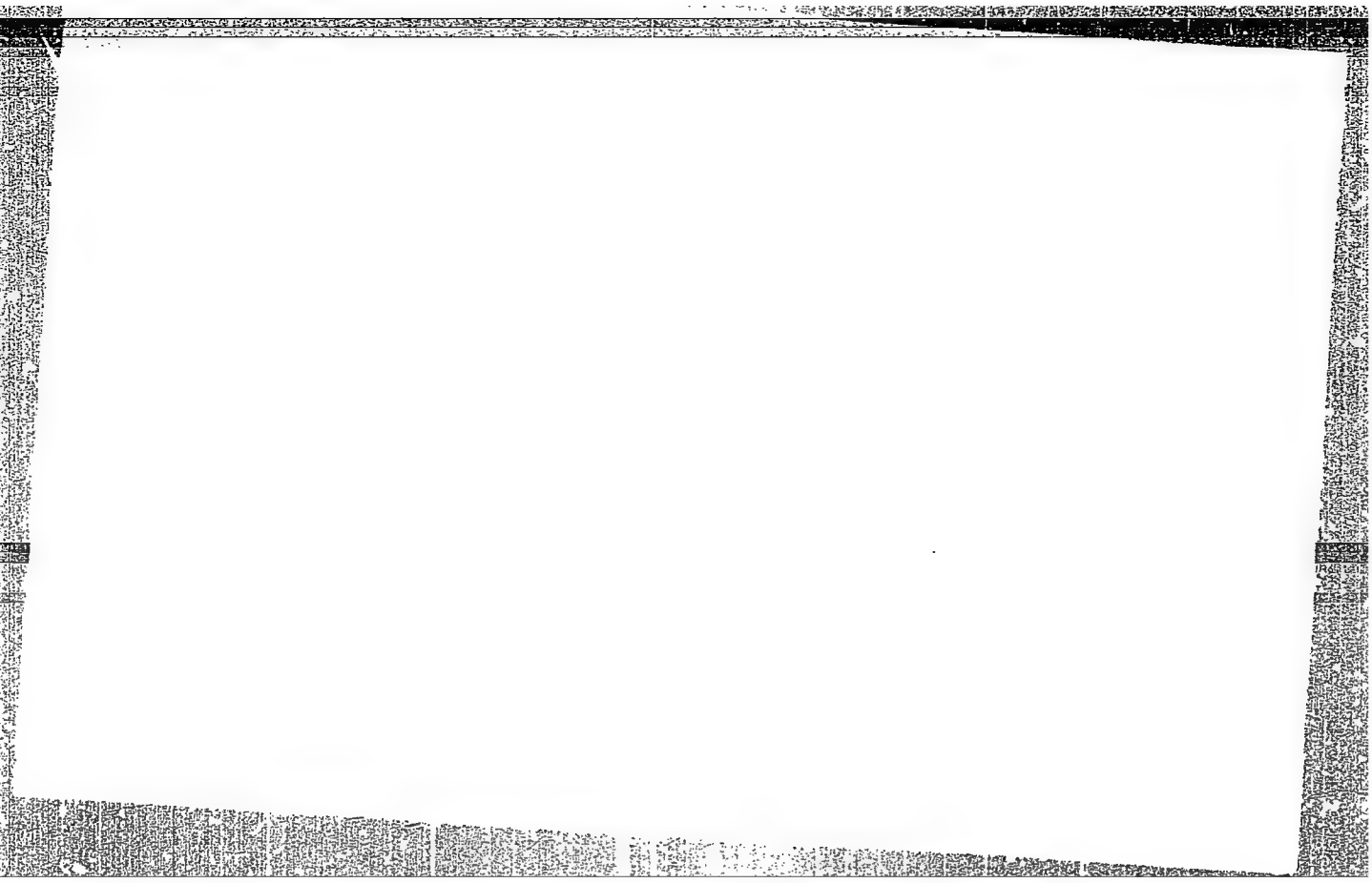

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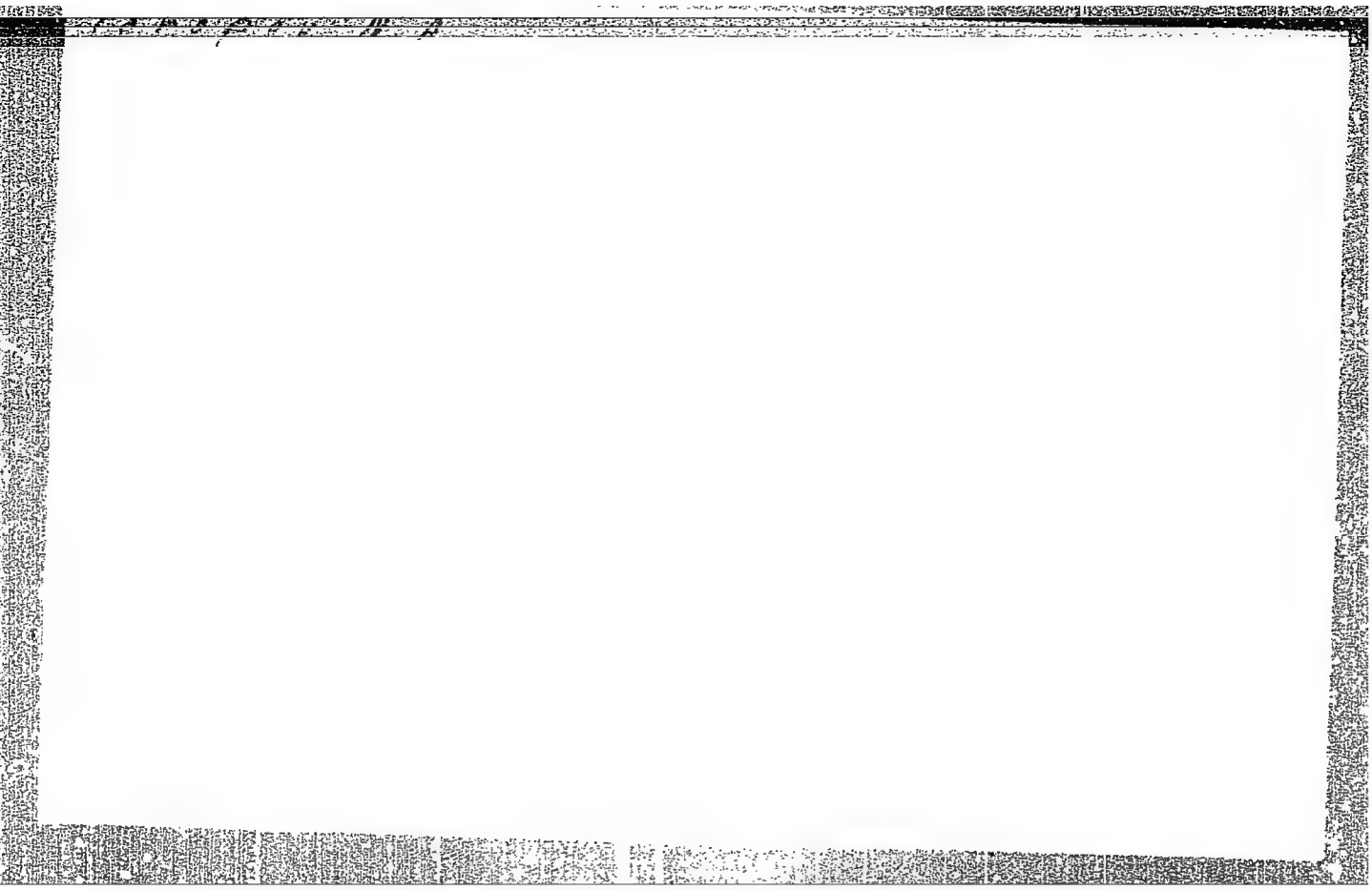

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Toropov, N.A.

Investigation of Cr_2O_3-colored crystals of synthetic ruby. N. A. Toropov and I. F. Andreev. *Trudy Leningrad. Tekhnol. Inst. im. Lensoveta* 1954, No. 29, 60-5. The absorption spectrum of the ruby crystals is used for a photometric detn. of the amt. of the staining oxide. The transmittance (T) curves which are related to the extinction curves are defined by the relation $D = \log T$ (D is the optical d.), following the Lambert-Beer law. The measurements were made with crystal plates oriented parallel and perpendicular to the optical axis. The characteristic absorption peaks are at 410, and 550 to 600 mμ parallel to the optical axis, and 420 and 500 to 570 perpendicular to the optical axis. The optical d. and the extinction coeffs. of samples perpendicular to the optical axis are considerably higher than those for the orientation parallel to the optical axis. They are linear functions of the concn. in Cr_2O_3. Also a_0 and c_0 of the unit cell increase proportionally to the Cr_2O_3 content. X-ray powder data are given for leucosapphire and a ruby with 3.2% Cr_2O_3. W. Eitel

Toropov N. A.

2

Determination of the contents of the staining oxide (Cr_2O_3) monocrystals of synthetic ruby. N. A. Toropov and I. F. Ainey. *Trudy Leningrad. Tekhnol. Inst. im. Lensoveta* 1954, No. 29, 90–8.—The as ε and ω are detd. by the prism method for three rubies with 0.13, 0.33, and 2.02% Cr_2O_3. The indexes are functions of the concn. of Cr_2O_3 in the synthetic rubies. They are tabulated for six wave lengths of the visible spectrum. W. Eitel

Toropov, N. A.

USSR/Chemistry - Silicates

Card 1/1 Pub. 22 - 24/48

Authors : Toropov, N. A., and Skue, E. R.

Title : Effect of fluoride compounds on solid calcium alumo-ferrite solutions

Periodical : Dok. AN SSSR 98/3, 415-418, Sep 21, 1954

Abstract : The effect of certain fluoride compounds on the stability of solid solutions of $2CaO \cdot Fe_2O_3$, $4CaO \cdot Al_2O_3 \cdot Fe_2O_3$ and $6CaO \cdot 2Al_2O_3 \cdot Fe_2O_3$, was investigated at high temperatures. It was established that the crystals of the investigated solid calcium alumo-ferrite solutions form a so-called "celite" of Portland cement clinker and also make it possible to determine certain technical properties of the cement. Six references: 2-USA; 2-German; 1-Italian and USSR (1928-1951). Tables; illustrations.

Institution : Academy of Sciences USSR, Institute of Chemistry of Silicates

Presented by: Academician S. I. Vol'fkovich, April 28, 1954

BOTVINKIN, O.K.; YEVSTROP'YEV, K.S., doktor khimicheskikh nauk, professor, retsenzent; TOROPOV, N.A., doktor tekhn.nauk, professor, retsenzent; MAZURIN, O.V., kandidat khim. nauk, retsenzent; KUKOLEV, G.V., doktor tekhnicheskikh nauk, peofessor, retsenzent; ALKHD, I.Ya., kandidat tekhnicheskikh nauk, redaktor; DEMINA, G.A., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy redaktor.

[Physical chemistry of silicates] Fizicheskaia khimiia silikatov. Izd. 2-oe, perer. i dop. Moskva, Gos.izd-vo lit-ry po stroit. materialam, 1955. 285 p. (MLRA (9:5)

1.Kafedra obshchey tekhnologii silikatov Leningradskogo ordena Trudovogo Krasnogo Znameni Tekhnologicheskogo instituta imeni Lensoveta (for Yevstrop'yev, Toropov, Mazurin).
(Silicates)

53

Structure of Glass—Report of a Symposium on the Structure of Glass, Leningrad, November 23 to 27, 1933. Edited by A. A. Lebedev, N. A. Toropov, V. P. Barzakovskiĭ, and A. A. Appen. Akademiya Nauk S.S.S.R., Leningrad-Moscow, 1955. 308 pp.—Upon the invitation of the Institute of Silicate Chemistry of the Academy of Sciences U.S.S.R., the State Optical Institute, and the Leningrad Section, All-Union Society of Silicate Technological Research, a symposium on the structure of glass was organized, which was attended by more than 500 representatives from 96 institutions and 28 cities of the U.S.S.R. The introductory address by A. A. Lebedev emphasizes the importance of structural conversions in glass as the basis of many phenomena which cannot be explained otherwise, e.g., the annealing range of optical glass, the luminescence, and the diffraction of X rays, electrons, and neutrons. The crystallites, as assumed in some theories, in the order of magnitude of 10 to 15 a.u. should be detectable through more accomplished electron microscopic methods in the future. The chain structures assumed by others are still hypothetical; their confirmation would be an important approach toward the manufacture of unbreakable glass. The titles of the papers read in the symposium are as follows: K. S. Evstrop'ev: "Crystallite theory of glass structure" (pp. 9–18). P. P. Kobeko: "Structure and properties of organic glasses" (pp. 19–25). O. K. Botvinkin: "Glass structure" (pp. 26–29). B. A. Porai-Koshits: "Possibilities and results of X-ray methods in the investigation of glassy materials" (pp. 30–43). O. A. Esin and P. V. Gel'd: "Structural

M. A. KOUTZ
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A. A. LEBEDEV

nature of glassy and liquid silicates" (pp. 44–55). E. F. Gross and V. A. Kolesova: "Combination scattering of light and structure of glassy materials" (pp. 50–61). V. V. Tarasov: "Quantum theory of heat conductance and structure of silicate glasses" (pp. 62–69). V. A. Florinskaya and R. S. Pechenkina: "Spectra of simple glasses in the infrared and their relations to the structure of glass" (pp. 70–95). A. A. Appen: "Coordination principle in the distribution of ions in silicate glasses" (pp. 96–106). L. I. Demkina: "Ideas on the fine structure of silicate glasses resulting from investigations on the properties of glasses in simple systems" (pp. 107–19). A. I. Stozharov: "Measurement of the thermal expansion of glass as a method for the investigation of its structure" (pp. 120–25). L. G. Mel'nichenko: "Theoretical opinions of D. I. Mendeleev on the structure of silicates and glasses and their importance for the actual science" (pp. 126–35). V. P. Barzakovskii: "Ideas of D. I. Mendeleev on the chemical character of silicates" (pp. 136–40). O. S. Molchanova: "Properties of glasses in the ternary system Na_2O–B_2O_3–SiO_2" (pp. 141–44). E. A. Poral-Koshits: "Structure of Na borosilicate glasses" (pp. 145–61). S. P. Zhdanov: "Structure of glass as seen from the results of the investigation of the structure of porous glasses and films" (pp. 162–75). D. P. Dobychain: "State of SiO_2 in microporous glass" (pp. 176–80). S. I. Dubrovo: "Corrosion of glassy silicates and of Na aluminosilicates by aqueous solutions in its relation to the state of SiO_2 in glass" (pp. 181–84). A. F. Zak: "Existence of distinct chemical compounds in the glass structure" (pp. 185–86). Yu. A. Gastev: "Chemical stability of glass" (pp. 187–89). N. A. Tudorovskaya: "Structural variabilities of the light refractive index of glass at temperatures below 300°C." (pp. 190–97). D. I. Levin: "Rayleigh scattering in glasses and the glass structure" (pp. 198–201). M. M. Gurevich: "Spectral relation of

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A. A. LEBEDEV

light scattering in Na borosilicate glasses" (pp. 202–206). A. N. Sevchenko: "Application of the luminescence method for the investigation of the glassy state" (pp. 207–15). G. O. Bagdyk'yants: "The problem of an oriented structure of glass" (pp. 216–18). V. I. Shelyubskii: "Application of the electron microscope to the investigation of glass" (pp. 219–23). L. A. Afanas'ev: "Experiments on the electronographic study of industrial glasses" (pp. 224–26). A. I. Avgustinik: "Some properties of highly aluminous glasses" (pp. 227–29). N. V. Solomin: "Chemical compounds in borate glasses" (pp. 230–33). G. A. Kolykov: "Selective volatility of components of the system Na_2O–B_2O_3–SiO_2, a method for the investigation of the nature of the glassy state" (pp. 234–44). A. G. Bergman: "Visual-polythermic method for the investigation of crystallization in glasses and silicate systems" (pp. 245–47). V. A. Kozheurov: "Phenomenon of limited miscibility in binary silicate melts" (pp. 248–50). V. T. Slavyanskii: "Temperature function of viscosity and structure in some glassy and liquid materials" (pp. 251–55). M. M. Skornyakov: "Viscosities of glasses above and below the liquidus temperature" (pp. 256–57). V. A. Ioffe: "Dielectric losses in silicate glasses" (pp. 258–63). B. I. Markin: "Electric conductance of simple borate systems in the glassy state" (pp. 264–66). V. A. Presnov: "I. Electric

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A. A. LEBEDEV

conductance of glasses in strong electric fields; II, The wetting of metals by glass" (pp. 267–69). V. P. Pryanishnikov: "Electric conductance of silica glass" (pp. 270–72). K. P. Azarov: "Structure of enamels and their properties" (pp. 273–75). A. G. Repa: "Oxygen potential of glass" (pp. 276–79). L. V. Sergeev: "The glassy state of organic polymers" (pp. 280–82). Yu. N. Andreev: "Problems of the methodolcgical basis of the actual ideas on the structure of glass" (pp. 283–89). The ample discussions (pp. 293 to 302) include the following main items: general remarks on the nature of glass; physical chemistry of polycomponent systems and the glass structure; optical properties and glass structure; caloric and electrical properties and the structure of glass; crystallochemistry and glass structure; and problems of further development of glass science. The concluding address of A. A. Lebedev (pp. 360–62), and the official resolution of the Symposium Meeting (pp. 303–65) announce plans for another Symposium on the Structure of Liquids and, in 1956, the third Symposium on the Structure of Glass, under the auspices of the Academy of Sciences U.S.S.R. The present volume is excellently printed and illustrated; it is a real milestone in the evolution of modern investigations on glass structure.

W. Eitel

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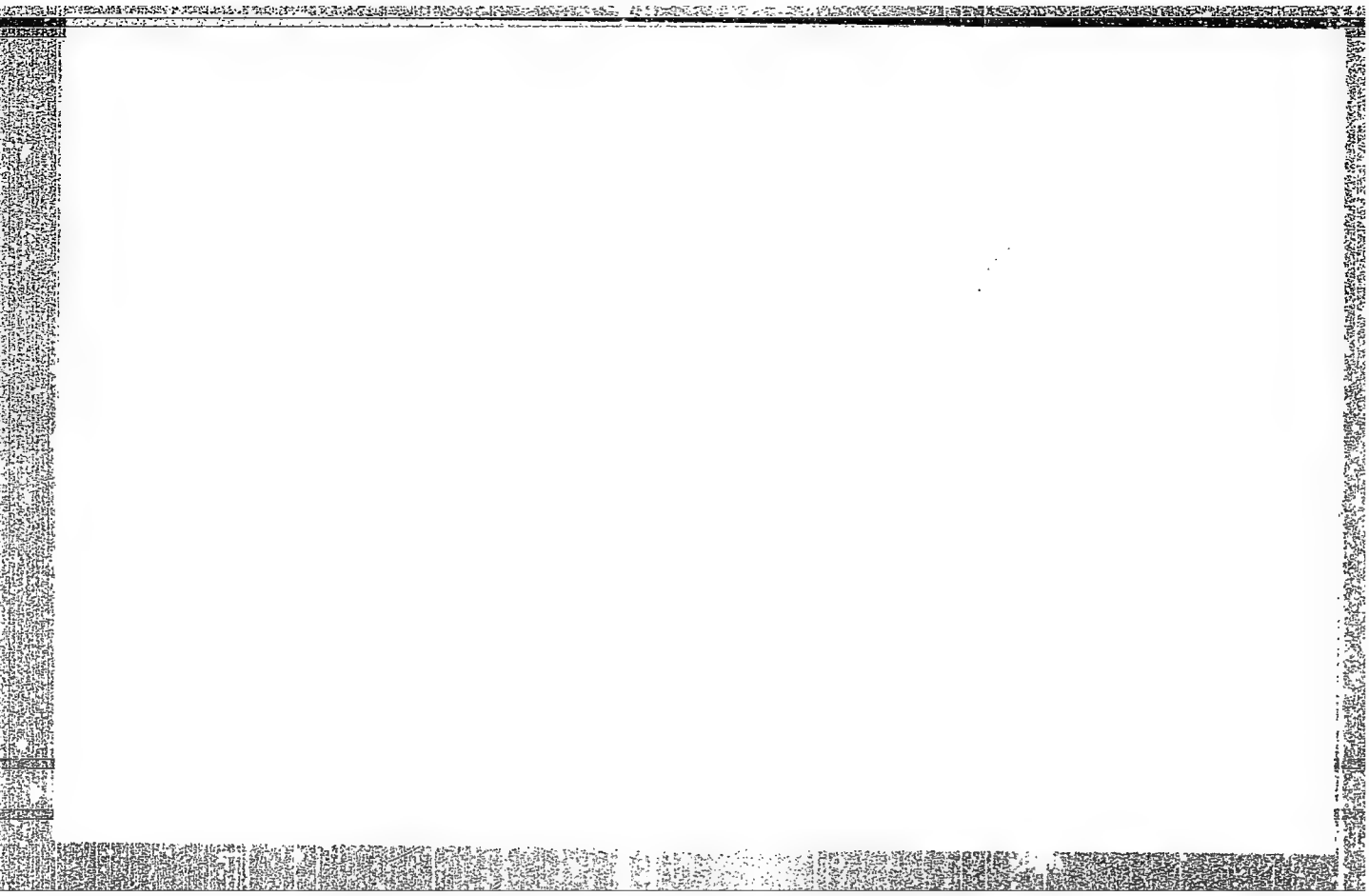

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TOROPOV, N. A.

USSR/ Chemistry - Silicates

Card 1/1 Pub. 40 - 1/27

Authors : Toropov, N. A.; Galakhov, F. Ya.; and Bondar', I. A.

Title : Solid solutions formed by celsian, dibarium trisilicate and barium disilicate (Sanbornite)

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 3-8, Jan-Feb 1955

Abstract : Experiments were conducted to establish the zone, boundaries and liquidus of a ternary solid solution formed by barium disilicate, dibarium trisilicate and celsian. It was found that the refraction index for this zone depends largely upon the barium disilicate and aluminum oxide contents of the solution. The refraction index decreases with the increase of barium disilicate and Al_2O_3. The equilibrium ratio of the investigated solution was established on the basis of several polythermal samples with constant Al_2O_3 contents. Two USA references (1922 and 1950). Graphs; table; illustrations.

Institution : Acad. of Sc., USSR, Institute of Chem. of Silicates

Submitted : January 28, 1954

TOROPOV, N.A., professor; AVGUSTINIK, A.I., professor; BARZAKOVSKIY, V.P., doktor khimicheskikh nauk

Scientific research conducted in Czechoslovakia on the technology of silicates. Stek. i ker. 12 no.10:12-13 O '55. (MLRA 9:1)
(Silicates) (Czechoslovakia--Research)

Toropov N.A.

5

Influence of fluorine salts on tricalcium aluminate at high temperatures. N. A. Toropov, B. V. Volkonskii, and V. I. Sadkov. *Tsement*, 21 [4]: 12-13 (1955).—Roentgen-ionization analysis was used to determine the effect of 5% K, Na, and Ca fluoride on tricalcium aluminate at temperatures up to 1500°C. Sodium and K fluorides begin to exert their influence and cause decomposition of tricalcium aluminate at 800° into pentacalcium aluminate and free CaO. Above 1300°, the influence of these salts ceases. The action of CaF_2 is similar to that of NaF and KF, but tricalcium aluminate decomposes at $t \approx 1000°$.

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Subject : USSR/Chemistry AID P - 1371

Card 1/1 Pub. 119 - 4/6

Authors : Toropov, N. A. and Bondar', I. A., (Leningrad)

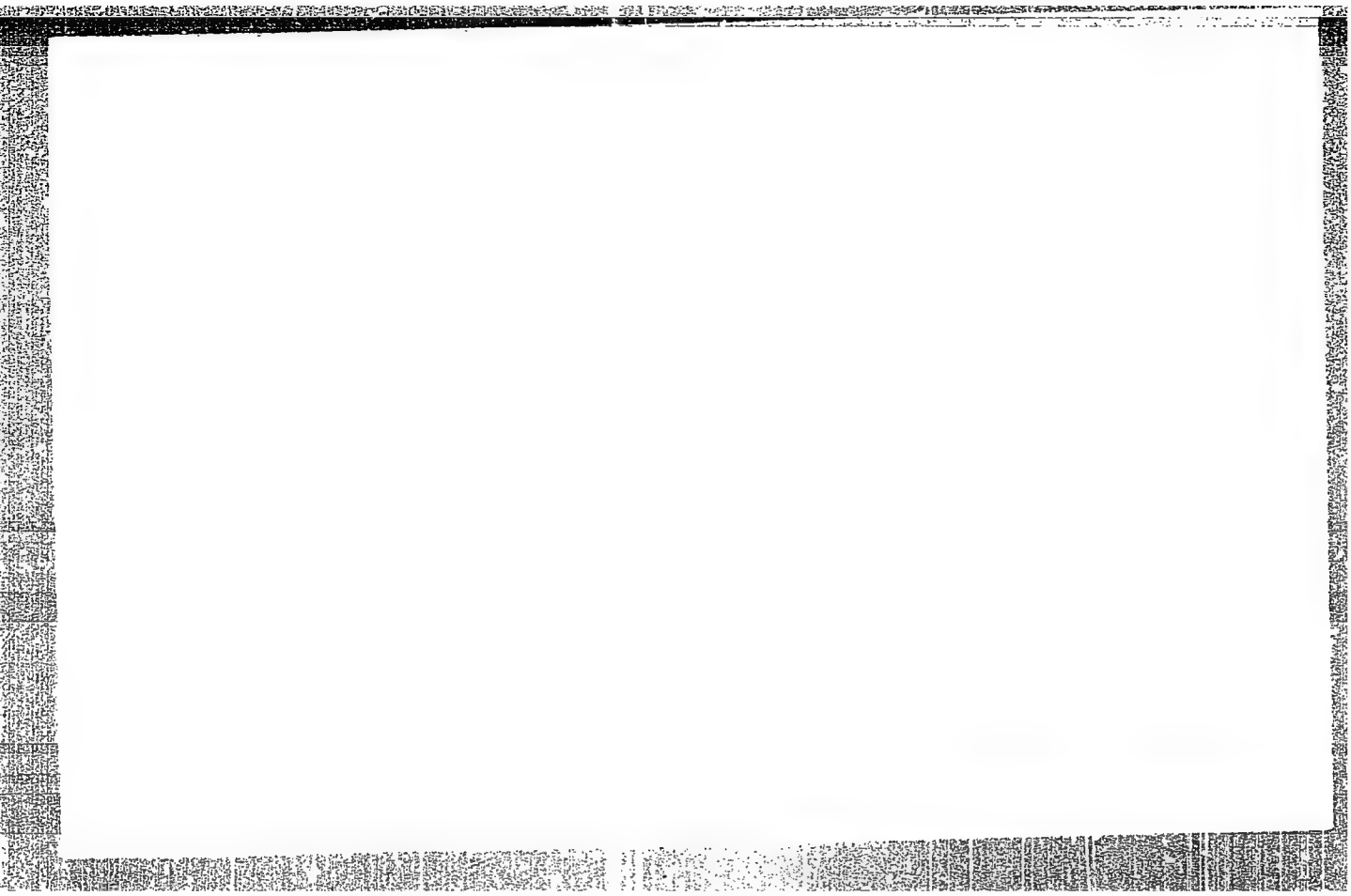
Title : Fluoberyllates and other crystallochemical analogs of silicates and like substances

Periodical : Usp. khim., 23, no. 1, 52-68, 1955

Abstract : A survey of the literature on fluoberyllates is given; most of the references are to non-Russian sources. A high degree of analogy is found between BeF_2 and SiO_2. Many binary systems are reviewed. Twenty diagrams, 2 tables, 37 references (7 Russian: 1939-53).

Institution : None

Submitted : No date



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Toropov, N. A.

AID P - 2290

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 15/21

Authors : Toropov, N. A. and M. M. Sychev

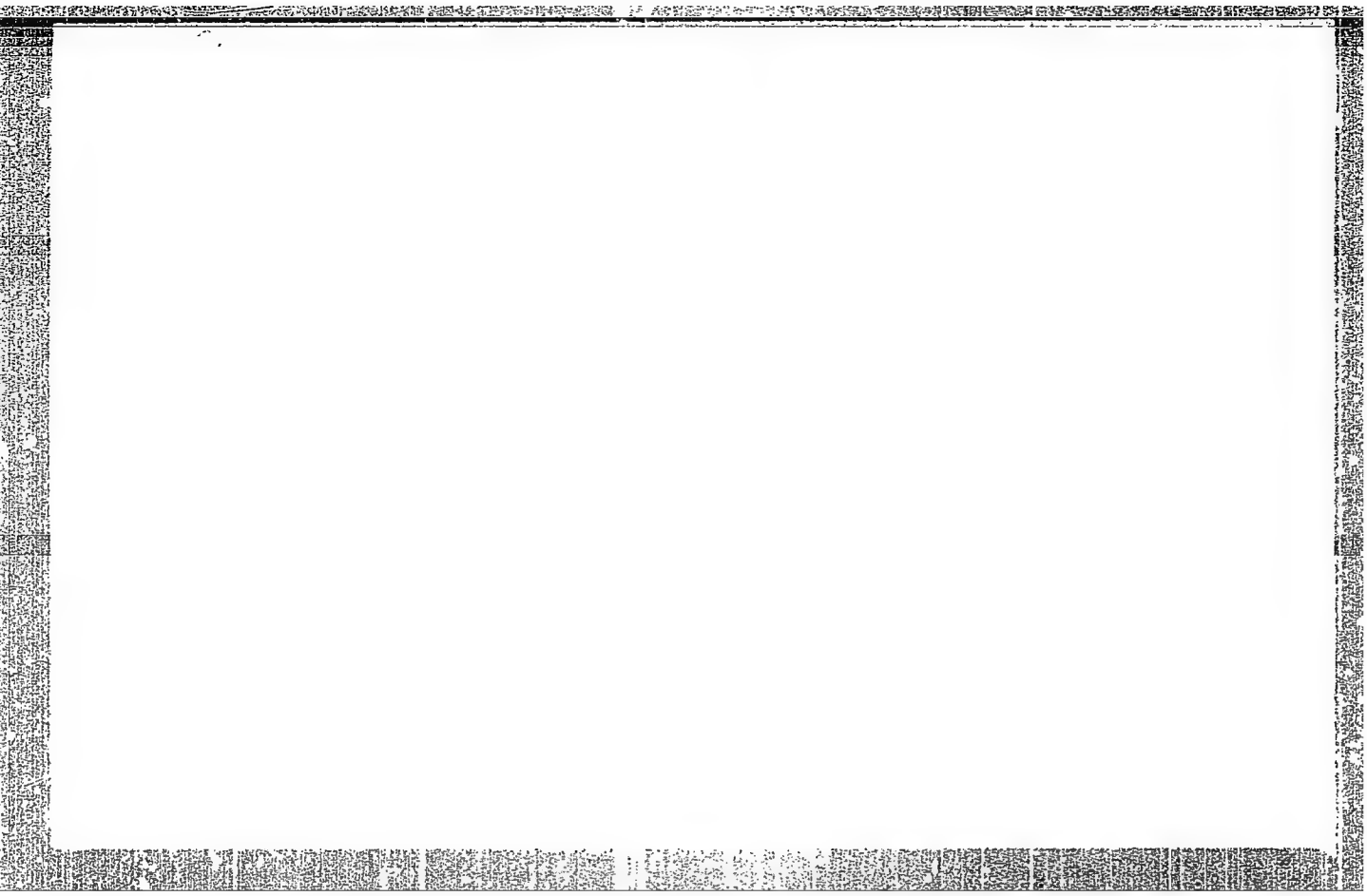
Title : Study of the temperature resistance of mineral wool fibers

Periodical: Zhur. prikl. khim., 28, no.3, 322-325, 1955

Abstract : A method for determination of devitrification with the use of Kurnakov's differential pyrometer is given. Increase in the Fe_2O_3- content lowers and increase in Al_2O_3-content increases the resistance of mineral wool fibers to high temperature. Two tables, 1 diagram, no references.

Institution: None

Submitted : S 6, 1953



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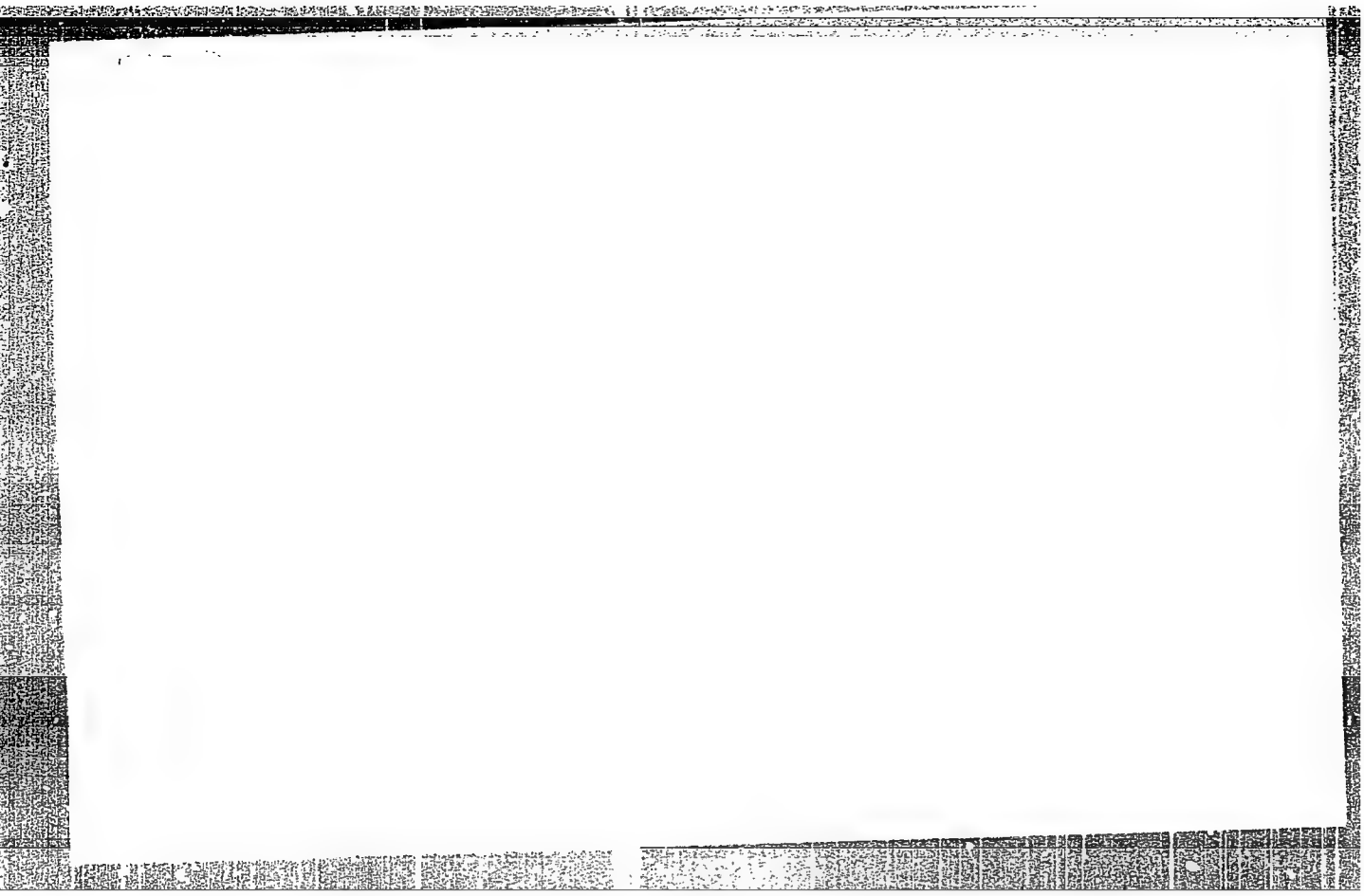

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TOROPOV, N.A.

BOYKOVA, A.I. [translator]; BONDAR', A.I. [translator]; VOANO, V.G. [translator]; YEGOROVA, Ye.N. [translator]; NIKOGOSYAN, Kh.S. [translator]; TOROPOV, N.A., professor, redaktor; ZAKHAR'YEVSKIY, V.A., redaktor; OGANDZHANOVA, N.A., redaktor; DUMBRE, I.Ya., tekhnicheskiy redaktor

[Physical chemistry of silicates; a collection of articles. Translated from the English and German] Fizicheskaia khimiia silikatov; sbornik statei. Perevod s angliiskogo i nemetskogo A.I.Boikovoi i dr. Pod red. N.A.Toropova. Moskva, Izd-vo inostrannoi lit-ry, 1956. 302 p. (MIRA 9:7)
(Silicates)

YEVSTROP'YEV, Konstantin Sergeyevich, professor, doktor khimicheskikh nauk; TOROPOV, Nikita Aleksandrovich, professor, doktor tekhnicheskikh nauk; GUREVICH, E.A., redaktor; GLADKIKH, N.N., tekhnicheskiy redaktor

[The chemistry of silicon and the physical chemistry of silicates] Khimiia kremniia i fizicheskaia khimiia silikator. Izd. 2- oe. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1956. 339 p. (MLRA 10:3)
(Silicon) (Silicates)

TOROPOV, N. A. Dr. Tech. Sci.

"Latest Data on the Phase Diagram of Aluminum Oxide -- Silicon Dioxide and on the Behavior of Aluminous Refractories in Glass-Making Furnaces," a paper geiven at the 4th International Congress on Glass, Paris, 2-7 Jul 1956

Sum. 1274

15-57-7-9444

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7, pp 103-104 (USSR)

AUTHORS: Toropov, N. A., Bondar', I. A.

TITLE: Synthesis of a Fluoberyllate Type of the Double Calcium and Barium Metasilicate (Sintez ftoroberillatnoy modeli dvoynogo metasilikata kal'tsiya i bariya)

PERIODICAL: Sb. nauch. rabot po khimi i tekhnol. silikatov, Moscow, Promstroyizdat, 1956, pp 20-23.

ABSTRACT: The compound $2NaF \cdot KF \cdot 3BeF_2$, the fluoberyllate analogue of the double calcium and barium metasilicate $2CaO \cdot BaO \cdot 3SiO_2$, has been synthesized. The following were used in the synthesis: 1) sodium fluoride (98 percent NaF), 2) potassium fluoride in the form of $KF \cdot H_2O$ (77 percent KF), and 3) beryllium fluoride, obtained by treating beryllium oxide with hydrofluoric acid (97.5 percent BeF). The fusion was made in a covered platinum crucible in a crucible furnace and then quenched (the melt poured out into a pan). To compare the compound

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